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Beyond Instrumentalism: A Substantivist Perspective on Law, Technology, and the Digital Persona

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BEYOND INSTRUMENTALISM: A SUBSTANTIVIST
PERSPECTIVE ON LAW, TECHNOLOGY, AND THE DIGITAL
PERSONA

*Frank Pasquale & Arthur J. Cockfield**

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ABSTRACT

Law and technology matters have traditionally been researched in discrete categories such as intellectual property (e.g., copyright, patent, or trademark) or intermediary liability and responsibility (e.g., secondary liability and telecommunications regulation). In the last two decades, however, academics have studied the broader interaction between law and technology across legal fields. This Article examines progress to date and discusses two distinct perspectives on law and technology.

The dominant approach has been an instrumentalist one that treats technology as a tool for individuals to use while downplaying its broader social implications. However, the fields of philosophy of technology, science and technology studies, and social studies of science are now mature enough to support a rival approach grounded in a deep understanding of the nature—rather than the results—of technological change. This substantivist approach suggests analytical principles to refine and improve technology law and policy in ways that rival, instrumentalist approaches have neglected. For instance, substantivist commitments support a law and technology construct called a “digital persona” to emphasize the need for laws and policies to promote autonomy within the online world. By contrasting instrumentalist and substantivist approaches, we demonstrate new ways to integrate ethics, policy, and law in the digital age.

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INTRODUCTION

The relationship between law and technology has traditionally been scrutinized in discrete categories such as intellectual property (e.g., copyright, patents, or trademarks) or intermediary liability and responsibility (e.g., secondary liability and telecommunications regulation). By studying law and technology issues as matters that should be relegated to such conceptually sealed boxes, legal

scholarship has sometimes promoted a body of doctrine that is unfinished and inadequately informed.

For example, consider the extraordinary rise of legal immunities for online intermediaries. In the case of Internet companies, Google and Facebook have serially won key copyright, trademark, and antitrust cases. In the U.S., Google and Facebook have asserted free expression immunities when sued for business torts, and they have avoided classification as a “consumer reporting agency” under relevant privacy laws, despite employers’ and bankers’ use of them to assess reliability and creditworthiness of applicants.¹ Each of these decisions may have been correct as a matter of law.

But what happens when a critical mass of close cases combines with network effects to give a few firms incredible power over our personal information about events, commerce, potential friends and soulmates, and more? What happens when these few firms and online social networks turn personal data against users themselves? What happens when foreign forces use the platforms built by these firms to influence elections by microtargeting users based on their own personal data? What happens when individuals’ real lives are increasingly interwoven with their digital personhood and hence they increasingly suffer discrimination via unfair social sorting? Legal-academic culture is very good at analysis but oft adrift when it comes to synthesis. Specialization obscures the larger context. Authorities around the world are now struggling with this problem, and scholars are searching for a more holistic perspective on technology law and policy.²

These questions are all the more urgent now that some technologists bill smart contracts, block chains, and other forms of automation as ways of replacing law *with* technology.³ The composite movements of #legaltech, #fintech, #regtech, and #insurtech have raised the stakes of regulation of new technologies. No longer is the

1. See Section IV.C and accompanying notes.

2. For a discussion of similar themes, see generally Kieran Tranter, *Nomology, Ontology, and Phenomenology of Law and Technology*, 8 MINN. J.L. SCI. & TECH. 449 (2007); Sanya Burgess, *Big Tech Companies Threaten Our Democracy, Warns EU Commissioner Margrethe Vestager*, NAT’L (Nov. 9, 2017), <https://www.thenational.ac/business/technology/big-tech-companies-threaten-our-democracy-warns-eu-commissioner-margrethe-vestager-1.673711> [<https://perma.cc/8NGK-BJNS>]; Nitasha Tiku, *Al Franken Just Gave the Speech Big Tech Has Been Dreading*, WIRED (Nov. 9, 2017), <https://www.wired.com/story/al-franken-just-gave-the-speech-big-tech-has-been-dreading/> [<https://perma.cc/DL4V-WMS2>].

3. *Examining the Innovative Technologies Being Used To Change the Way Financial Services are Provided and the Financial System Operates*, 115th Cong. 66, 76 (2017) (citing a statement from Professor Frank Pasquale).

question one of degree: How much should law and policy attempt to channel, limit, or encourage the development and dissemination of a technology? Rather, technology may usurp critical aspects of law, policy, and trusted institutions. Taken too far, the vertiginous possibility here is a demand that law itself submit to the dictates of technological development rather than encoding and enacting the values meant to shape technology.

Two paths of the field of law and technology illuminate how we have come to this impasse and how we might escape from it. An *instrumentalist* literature tends to consider both law and technology as means to ends: Technologies should be adopted as long as they promote an instrumental purpose that enhances efficiency.⁴

A rival approach models each as constitutive of certain social domains—that is, not merely one of many ways to order such domains but as critically affirming or distorting the ways in which human participants in a social order conceive of themselves and their activity.⁵ We call such an approach *substantivist* to contrast it with the instrumentalist school.

Instrumentalism's main tools of analysis are methodologically individualistic social sciences, such as economics and psychology. Instrumentalism focuses on individual disputes and fits more naturally with court cases that are both retrospective and specific. Substantivism, by contrast, draws on more holistic disciplines such as political science, philosophy, social theory, anthropology, and sociology. It reflects the broader, more substantive impacts of technology on individuals and their communities, including political and social perspectives.

Unsurprisingly, instrumentalism is dominant in the Western world. However, its dominance is not necessarily founded on it being a better approach than substantivism. The fields of philosophy of technology, science and technology studies, and social studies of science are now mature enough to support a canonical set of approaches to recurrent regulatory and legal dilemmas. Substantivism also fits better with administrative rulemaking processes, which are by nature polycentric and prospective. Such holistic thinking is necessary in order to preserve human values in a legitimate way in an increasingly technologized world.

4. See ANDREW FEENBERG, *TRANSFORMING TECHNOLOGY: A CRITICAL THEORY REVISITED* 5 (2002) (describing the instrumentalist theory of the relationship between law and technology).

5. See *id.* at 6-7 (describing an alternative view of the relationship and purpose of law and technology).

To support this claim, we explore how a substantivist vision of law and technology constructs and protects what can increasingly be called our digital persona, a broader notion than the normal focus on, say, digital identity within privacy law. A digital persona is essentially an online avatar of a real person whose life is interwoven within the digital world. Personhood is the self, and our minds are a mirror of how we are treated, including how our digital persona is treated.⁶

At this juncture in time, the online world is at a turning point. Will it continue to allow powerful forces of commerce, domestic and foreign governments, and malignant individuals to track us, discriminate against us, shape our thinking, and undermine our democratic institutions? Or will the online world free us of earthly structure so that the digital persona can travel on its journey relatively unmolested by these forces? The substantivist perspective of law and technology shows how law and policy can advance the latter goal. The digital persona model helps to understand the need for a conceptual shift away from the normally reactive focus on protecting identity (e.g., privacy laws that try to inhibit what third parties know about us) to a more proactive effort to protect our minds from manipulation or excessive influence as we navigate the online world.

This Article is organized as follows. Part I discusses historical approaches to studying law and technology, as well as how these approaches fail to illuminate important policy considerations in many circumstances. Part II describes how cyberlaw writings provided a first attempt by legal scholars to critically examine the broader relationship between law and technology, while nevertheless being rooted in a primarily instrumental vision of this relationship. Part III discusses how a substantivist perspective of technology can better identify critical policy concerns in a world increasingly mediated by complex technologies. Further, Part III reviews the different theories and perspectives supporting instrumentalism and substantivism as well as recent social scientific analysis of technological determinism. Part IV revisits cyberlaw analysis from a substantivist perspective, sets out our model based on the digital persona, and provides a case study of free expression online in the age of bots to show how this perspective can illuminate under-explored areas of policy concern. Part V concludes that broader forms of legal analysis, supported by mature social science theories of technology, can offer insight into guidelines and analytical frameworks at the intersection of law and technology.

6. See CHARLES HORTON COOLEY, *HUMAN NATURE AND THE SOCIAL ORDER* 183-84 (1902) (discussing how individuals form their personal identity).

I. LAW AND TECHNOLOGY PERSPECTIVES

Before addressing historical developments surrounding law and technology, some terminological clarification is in order. Both law and technology are notoriously contested concepts. For example, a spoon is a technology for eating, but there have been few, if any, sustained reflections on cutlery *as* technology in the past century or so. That is because in common parlance, our common sense of the technological carries with it a clarifying sensibility that it usually only makes sense to apply the term to objects which are relatively new ways of accomplishing tasks.⁷ Discussing the “Hapi-Fork,” a fork that electronically buzzes once its wielder has eaten a certain number of bites, under the rubric of technology makes more sense than applying that category to a fork *simpliciter*.

While the core of law is better defined than technology, it also has fuzzy edges. For example, the great legal theorist John Chipman Gray characterized even a statute as merely a *source of law* and not law itself, which was the exclusive province of courts to articulate.⁸ That particular distinction has faded in the past century, as statutes have become more ubiquitous and detailed, and agencies make policy judgments in order to clarify statutes. But as any student of U.S. administrative law knows, the distinction between agency rules with the force and effect of law and mere guidance or interpretive rules is not always clear to either courts or the regulated community.⁹ Nevertheless, such ambiguities do not make law a meaningless or arbitrary concept. Rather, they should instead caution analysts to be

7. For different views and definitions of technology, see, e.g., EDWARD TENNER, *OUR OWN DEVICES: THE PAST AND FUTURE OF BODY TECHNOLOGY* ix (2003). Tenner discusses the complementary principle of “technique,” or how the modification of the environment is used in performance. *See id.* Changes in behavior resulting from technology innovations inspires new hardware, which generates more innovations. *See id.* He discusses the theories of Jacques Ellul, who argued that modern human society is so swamped by technologies that technology and technique are now inseparable. *See id.* at 4-5. For further discussion of Ellul’s views, see *infra* Subsection III.A.3. Different academic disciplines have chosen to approach the somewhat controversial definition of technology in different ways. For example, Strategic Technology Analysis, as part of a broader management theory, defines technology as “created competence . . . expressed in technological entities consisting of devices, procedures, and acquired human skills.” Rias J. van Wyk, *Technology: A Fundamental Structure?*, 15 KNOWLEDGE TECH. & POL’Y 14, 19 (2002).

8. *See generally* JOHN CHIPMAN GRAY, *THE NATURE AND SOURCES OF THE LAW* (1909). Many thanks to Peter Quint for this reference.

9. *See* Memorandum from Attorney Gen. Jeff Sessions, Office of the Attorney Gen. on Prohibition on Improper Guidance Documents (Nov. 16, 2017), <https://www.justice.gov/opa/press-release/file/1012271/download> [<https://perma.cc/4QLZ-UAQ6>].

aware of the multifaceted nature of law before presuming to propound theories of law *tout court*. Mindful of the vital role of history and timing in the definition of technology and the articulation of law, we introduce in this section emblematic examples of legal systems and scholars struggling to apply legal principles to new and emerging technologies.

A. Historical Legal Approaches to Technology

Law has always addressed technological development, since new modes of life and affordances so often precipitate conflict. Intellectual property law provides a good example of such struggles. Before the invention of the printing press, it was relatively laborious to duplicate and disseminate any particular text.¹⁰ The inefficiency of hand printing provided a natural limit to the number of copies of any given work that could be distributed by someone without permission of the original author. The same logic applied to descriptions of ways of doing things or new products.

Lawmakers and judges struggled to balance the interests of inventors who created new technologies against the rights of those affected by the technologies, ranging from inventors and authors to copyists and readers to ordinary citizens. In fifteenth-century England, for instance, the invention of the printing press led to new ways about thinking of the role of authors and publishers.¹¹ Shortly after the invention of the printing press, a concept of individual work began to spread through society. Technical affordances of widespread copying and distribution helped generate new ideas of commodification.

By 1493, printers and authors in England and Venice were asking for exclusive rights to print and disseminate their works, laying the foundations of copyright law.¹² These new rights were accompanied by the growth of censorship laws as medieval rulers and church authorities sought to control both the content of printed manuscripts as well as the content-producers themselves.¹³ More recently, while intellectual property law has flourished and grown over the past century in the West, free expression law has undercut

10. See ELIZABETH L. EISENSTEIN, *THE PRINTING PRESS AS AN AGENT OF CHANGE* xvi (14th ed. 2009).

11. See Jane C. Ginsburg, "Une Chose Publique"? *The Author's Domain and the Public Domain in Early British, French and US Copyright Law*, 65 *CAMBRIDGE L.J.* 636, 639 (2006).

12. See Martha Buskirk, *Commodification as Censor: Copyrights and Fair Use*, 60 *OCTOBER* 82, 84-88 (1992).

13. See *id.* at 85.

ensorship as a form of control of information in these same societies.¹⁴

From these earlier roots arose the traditional categories of intellectual property law—patents, copyrights, and trademarks. Sherman and Bently discuss how these developments were derived through complex social processes involving business lobbying, Victorian sensibilities, and judicial misunderstanding of certain scientific principles.¹⁵ Despite this uneven start, the categorization clearly had a massive influence on subsequent legal developments.¹⁶

Later on, the eighteenth and nineteenth centuries witnessed an explosion of laws responding to the industrial revolution. Technology change had provoked a new machine society fueled by the development of machine production and machine transportation such as steam engine boats.¹⁷ In their wake, different legal innovations were introduced, including labor laws (in particular the creation of child labor laws and workplace accident laws), housing policies due to overcrowded cities, pollution regulation, and “poor laws” (i.e., welfare laws that sought to provide financial relief to destitute families).

A number of works have reviewed the birth of railroads within this new machine society and how this innovation provoked legal changes to accommodate the new forms of transportation and its required infrastructure.¹⁸ The changing laws also sought to account for, promote, or ignore, the interests of consumers and government-imposed shipping fees, farmers whose lands were expropriated for railway passage, and the powerful railroad companies themselves.¹⁹

14. See WILLIAM W. FISHER III, *THE GROWTH OF INTELLECTUAL PROPERTY: A HISTORY OF THE OWNERSHIP OF IDEAS IN THE UNITED STATES* (1999), <https://cyber.harvard.edu/people/ffisher/iphistory.pdf> [<https://perma.cc/77YD-WFEV>].

15. See generally BRAD SHERMAN & LIONEL BENTLY, *THE MAKING OF MODERN INTELLECTUAL PROPERTY LAW: THE BRITISH EXPERIENCE 1760-1911* (1999).

16. See Robert P. Merges, *One Hundred Years of Solicitude: Intellectual Property Law, 1900-2000*, 88 CALIF. L. REV. 2187, 2190 (2000).

17. See Donald G. Gifford, *Technological Triggers to Tort Revolutions: Steam Locomotives, Autonomous Vehicles, and Accident Compensation*, J. TORT L. (forthcoming 2018), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3090636 [<https://perma.cc/YV4L-PNY6>]; see also JOHN FABIAN WITT, *THE ACCIDENTAL REPUBLIC: CRIPPLED WORKINGMEN, DESTITUTE WIDOWS, AND THE REMAKING OF AMERICAN LAW 2* (2004).

18. See, e.g., LAWRENCE M. FRIEDMAN, *AMERICAN LAW IN THE 20TH CENTURY* 53 (2002); STEVEN W. USSELMAN, *REGULATING RAILROAD INNOVATION: BUSINESS, TECHNOLOGY AND POLITICS IN AMERICA, 1840-1920*, at 382 (2002).

19. See FRIEDMAN, *supra* note 18; see also USSELMAN, *supra* note 18 (discussing, from a historical perspective, U.S. government efforts to regulate railway innovations, including how regulatory decisions reinforced certain interests).

As technology became more interwoven with the lives of individuals and their communities, Western legal norms began to slowly adapt to these developments. Sherman and Bently further note that, by the mid- to late-nineteenth century, traditional doctrine could not properly adapt to technological developments, and English intellectual property law became more abstract and forward looking by moving away from a reactive and case specific analysis of the law surrounding “mental labour.”²⁰ In a world increasingly mediated by complex technologies, we now turn to our claim for the need for an ongoing evolution toward holistic analysis of the intersection of law and technology.

B. Blind Spots in Historical Legal Approaches to Technology

Legal responses to both the rise of the printing press and the industrial revolution bear similar hallmarks. Courts and lawmakers were largely reactive to technological developments.²¹ They seemed reluctant to enact or develop new laws at the introduction of new technologies, despite the danger that new uses of technologies could violate public values or destabilize valued social arrangements. Nor were they keen on setting new laws or developing new ways of thinking that envisioned the development of related future technologies.²² As a result, when issues dealing with new technologies reached legislatures or courts, the lawmakers or judges tended to fit the new technology into pre-existing categories; these efforts were later identified by cyberlaw scholars as trying to fit “new wine into old bottles.”²³

Legal scholars subject laws to deliberation and review. However, technological developments that accompany these legal changes have less frequently been subject to such scrutiny and challenge. This occurs despite the fact that “[c]hanges in technology affect people’s ability to produce, consume[,] and exchange goods just

20. SHERMAN & BENTLY, *supra* note 15, at 6-7.

21. See Arthur J. Cockfield, *Towards a Law and Technology Theory*, 30 MAN. L.J. 383, 398, 407-09 (2004) (discussing the need for broader theories and perspectives on law and technology).

22. For discussion, see Monroe E. Price & John F. Duffy, *Technological Change and Doctrinal Persistence: Telecommunications Reform in Congress and the Court*, 97 COLUM. L. REV. 976, 1012-15 (1997).

23. See *infra* notes 66-68 (showing the Easterbrook–Lessig exchange and how it generated significant discussion, including discussions about cyberlaw teaching). See, e.g., Marci Wilson, *Is Internet Law a Discreet Practice or Just Old Wine in a New Bottle?*, 19 OF COUNSEL, at 9 (Oct. 9, 2000); Renato Mariotti, *Cyberspace in Three Dimensions*, 55 SYRACUSE L. REV. 251, 262-63 (2005).

as surely as a change in laws or regulations.”²⁴ Accordingly, technology change can be subjected to ethical evaluation similar to the approach within legal analysis.

A more critical examination of the interplay between law and technology is necessary as technological developments determine certain paths and influence human behavior, often in unanticipated ways.²⁵ As Marshall McLuhan pointed out, “we become what we behold[;] we shape our tools and afterwards our tools shape us.”²⁶ Max Weber similarly noted that when we surrender our goals and social practices to technologies, it forms an “iron cage” that restricts efforts to obtain desired policy objectives.²⁷

As our lives become more entwined with technology, technology exerts more influence on our values, norms, interests, and culture.²⁸ Embedded technologies are particularly powerful, presenting greater resistance to change.²⁹ Improvements in technology are double edged; some promote social interests by permitting individuals to enjoy wealthier and healthier lives, but others lead to socially ambivalent or even disastrous results. Moreover, there is no obvious final accounting for the balance of harm and help for many critical technologies. Advances in surveillance technology have arguably promoted state security, but enhanced surveillance could also

24. PAUL B. THOMPSON, JUSTICE, HUMAN RIGHTS AND ETHICS ISSUES IN SCIENCE AND TECHNOLOGY POLICY 123 (2002). Part of this phenomenon is a consequence of the social acceleration of time, which undermines the effectiveness of legislative, regulatory, and judicial interventions in many areas. See WILLIAM SCHEUERMAN, LIBERAL DEMOCRACY AND THE SOCIAL ACCELERATION OF TIME 1 (2004).

25. See MARSHALL MCLUHAN, UNDERSTANDING MEDIA: THE EXTENSIONS OF MAN 23 (1994).

26. *Id.* at xxi. McLuhan theorized that media, in the beginning, acts as extensions of people, but over time people become extensions of media. See *id.* When the technology is pushed to its limit, it becomes the driver of social change or the message itself. See *id.*

27. LAWRENCE A. SCAFF, FLEEING THE IRON CAGE: CULTURE, POLITICS, AND MODERNITY IN THE THOUGHT OF MAX WEBER 5 (1989).

28. See, e.g., DAVID LYON, SURVEILLANCE SOCIETY: MONITORING EVERYDAY LIFE 1-2 (2001); MARK STEFIK, THE INTERNET EDGE: SOCIAL, LEGAL AND TECHNOLOGICAL CHALLENGES FOR A NETWORKED WORLD 3-4 (1999); MANUEL CASTELLS, THE POWER OF IDENTITY: THE INFORMATION AGE—ECONOMY, SOCIETY AND CULTURE 1-2 (1997).

29. See Thomas P. Hughes, *Technological Momentum*, in DOES TECHNOLOGY DRIVE HISTORY? THE DILEMMA OF TECHNOLOGICAL DETERMINISM 112 (Merriitt Roe Smith & Leo Marx eds., 1994) (“A technological system can be both a cause and an effect; it can shape or be shaped by society. As they grow larger and more complex, systems tend to be more shaping of society and less shaped by it.”).

undermine important democratic values like freedom of expression.³⁰ The acceleration of technological development also undermines society's ability to shape its adaptation to these developments, as they overwhelm the bottlenecks of legislatures and courts.³¹

Technology's role in modulating, shaping, and chilling opinion was not top of mind for those advancing it to deter terrorism or crime.³² But such effects, now reliably documented, should inform future deployments of surveillance, ranging from gait and iris recognition to Radio-Frequency Identification (RFID)-chipping. A law-and-technology perspective or theory can help us to understand the ways that technological developments can either subvert their own ends, undermine other policy goals, or transform our understanding of social realities and relationships. Technology is increasingly interwoven with our social, political, economic, and cultural fabric. Laws that respond to (or fail to respond to) technological change will increasingly have an impact on important values and interests.³³ Moreover, the traditional compartmentalization approach may inhibit progress toward a deeper and more nuanced understanding of law and technology. Wagner has noted that courts have struggled with limited success to apply legal precedents to disputes involving emerging technologies and "[i]n many cases, those law-and-technology issues that have been addressed have been resolved only partially or inconclusively."³⁴ Complementing these doctrinal silos, narrow

30. See Frank Pasquale, *Paradoxes of Privacy in an Era of Asymmetrical Social Control*, in *BIG DATA, CRIME AND SOCIAL CONTROL* 31-35 (Aleš Zavrašnik ed., 2018); see also BERNARD E. HARCOURT, *EXPOSED: DESIRE AND DISOBEDIENCE IN THE DIGITAL AGE* 168-69, 175-81 (2015).

31. See HARTMUT ROSA, *SOCIAL ACCELERATION: A NEW THEORY OF MODERNITY* 261 (2013) (discussing the challenges to politics and law when "[i]nnovation cycles (the time between a scientific or technological invention and its introduction to the market) and product cycles (the lifetime of a given model) have been accelerated so much in certain sectors (for instance, in entertainment electronics and, to some extent, even in the automobile industry) that often even the dealer is unable to identify the most up-to-date product, let alone the consumer").

32. See Arthur J. Cockfield, *Surveillance as Law*, 20 GRIFFITH L. REV. 795, 801-08 (2011) (discussing how Surveillance Studies assesses, among other things, the broader social impact of post-9/11 government surveillance).

33. This view is consistent with views of observers who assert that technology developments cannot be separated from social, cultural, economic and political processes. To a certain extent, this view departs from what has been called the instrumental theory of technology where technologies should be adopted as long as they promote an instrumental purpose that enhances efficiency. For discussion, see ANDREW FEENBERG, *CRITICAL THEORY OF TECHNOLOGY* 5 (1991).

34. Dana R. Wagner, *The Keepers of the Gates: Intellectual Property, Antitrust, and the Regulatory Implications of Systems Technology*, 51 HASTINGS L.J. 1073, 1075 (2000).

methodological focuses have also occluded a more holistic perspective on the interaction between law and technology and their broader societal impact.³⁵

An alternate emerging approach is to examine the ways that traditional doctrinal categories of the law—torts, criminal law, contracts, property—interact with the specific technologies.³⁶ More recent law-and-technology writings are sensitive to the substantive impact of technology on interests the law has traditionally sought to protect.³⁷ If technology threatens these interests, these perspectives sometimes call for judicial approaches that are less deferential to precedent and legislative empowerment of agencies with flexible and broad mandates to monitor and channel the development of technology.

II. THE RISE OF CYBERLAW

Cyberlaw has featured both the instrumentalist and substantivist approaches to technology. This school began as scholars emphasized new ways of thinking about the relationship between law and technology.³⁸ Though instrumentalist approaches have dominated the field, we will explore how more substantivist approaches have always been a leitmotif and should become more important as the full consequences of digitization become more apparent.

The roots of cyberlaw began with a more narrow focus on computer and telecommunication technologies.³⁹ Laurence Tribe's *Channeling Technology Through Law* was a very early casebook on law and technology.⁴⁰ In 1971, seven American lawyers formed a computer law group to study how developments in computer

35. See generally Lyria Bennett Moses, *Why Have a Theory of Law and Technological Change?*, 8 MINN. J.L. SCI. & TECH. 589 (2007).

36. See *id.* at 594.

37. See *infra* Section IV.B.

38. See generally PATRICIA L. BELLIA, PAUL S. BERMAN, & DAVID G. POST, *CYBERLAW: PROBLEMS OF POLICY AND JURISPRUDENCE IN THE INFORMATION AGE* (2d ed. 2004).

39. We are grateful to Dag Spicer, Senior Curator at the Computer History Museum in Mountain View, California, for providing us with this background. In July 2017, the Computer History Museum began to curate the historic conference proceedings of the ITechLaw Association along with selected law and technology journals. See COMPUT. LAW ASS'N, *GUIDE TO THE COMPUTER LAW ASSOCIATION RECORDS (1982-2005)*, <http://archive.computerhistory.org/resources/access/text/finding-aids/102733964-CLA/102733964-CLA.pdf> [https://perma.cc/R7DH-7XRJ] (last visited Dec. 3, 2018).

40. LAURENCE TRIBE, *CHANNELING TECHNOLOGY THROUGH LAW* 5 (1973).

technologies were interacting with legal developments.⁴¹ They initially started to meet in different East Coast states, and the organization quickly grew in size. In 1973, the group was incorporated into the non-profit Computer Law Association (CLA).⁴² The CLA held several national and international conferences each year, including its annual Computer Law Update (later renamed the World Computer and Internet Law Congress), conducted workshops, and also published periodicals and reports on computer law.⁴³ As international membership grew, the CLA changed its name in 2006 to the International Technology Law Association, or ITechLaw; it continues to hold conferences around the world and publish related academic journals.⁴⁴

By the mid-1990s, the study of computer law morphed into the study of “cyberlaw” or “cyberspace law.”⁴⁵ Cyberlaw, which typically focuses on information technology and Internet developments, was an early attempt by legal scholars as a group to discuss general principles and theories surrounding the relationship between law and technology. A reason for such extensive discussion was the fact that the Internet merged (within one online forum) seemingly endless forms of social and commercial interaction, and thus implicated a wide range of laws: free speech, privacy, contracts, legal jurisdiction, intellectual property, and many other fields.

In reaction, legal academics struggled to understand how this complex stew of activities would mesh with law. This Part reviews two core cyberlaw debates that were carried forward within subsequent law and technology discussions: whether the Internet and cyberspace were so new they required entirely new ways about thinking about the law, and in what situations lawmakers should seek to regulate code to pursue policy goals.

41. COMPUT. LAW ASS'N, *supra* note 39.

42. *Id.*

43. *See id.*

44. *Id.*

45. In the U.S., for classroom purposes, computer law casebooks were revised into cyberlaw casebooks. In addition, the first cyberlaw casebook that grappled exclusively with legal issues surrounding the Internet was published. *See* RAYMOND S. R. KU, MICHELE A. FARBER, & ARTHUR J. COCKFIELD, *CYBERSPACE LAW: CASES AND MATERIALS* (2002). The American Association of Law Schools finally changed the name of its Section on Computer Law to “Internet and Computer Law.”

A. Is Cyberspace a New Space Requiring New Laws?

Prior to the rise of the Internet, author William Gibson coined the word “cyberspace” in a short story.⁴⁶ In his later novel *Neuromancer*, Gibson elaborated on his vision of our future, a world increasingly mediated by computers: “Cyberspace. A consensual hallucination experienced daily by billions of legitimate operators, in every nation A graphic representation of data abstracted from the banks of every computer in the human system. Unthinkable complexity.”⁴⁷

Early Internet users who were familiar with Gibson’s works likely adopted the word “cyberspace.” As we explore in our discussion of the digital persona below, Gibson’s vision of cyberspace appears increasingly relevant as virtual reality technologies and haptic suits progressively allow users to “jack in” to the Internet for a more organic mental experience. This ongoing complex meshing of real personhood with digital personhood calls for proactive and holistic legal and policy protections for the latter, including possible reforms to human rights law.⁴⁸

Gibson’s dystopian vision of our future and its cyberpunk ethics likely played well with these early Internet participants who valued the complete freedom of their online experiences and considered themselves pioneers in an untamed online universe. For example, John Perry Barlow adopted the term in his well-known *A Declaration of the Independence of Cyberspace*, a call to arms against what he viewed as the unwarranted intrusion of government regulation into Internet matters.⁴⁹ Notably, Barlow’s and other early views focused on the need to protect our minds against outside influence during online experiences.⁵⁰ Unfortunately, the common focus on government as the chief agent of tyranny left many other problems unaddressed. Barlow’s brash libertarianism was rendered obsolete, as it became clear that spontaneous order is about as rare on the Internet as it is

46. See WILLIAM GIBSON, *BURNING CHROME* 176 (1986).

47. See WILLIAM GIBSON, *NEUROMANCER* 51 (1984).

48. See Lawrence M. Friedman, *On Planetary Law*, 54 *STAN. J. INT’L L.* 213, 214, 220 (2018) (discussing how global digital technologies are encouraging a convergence in human rights laws); see also Marta Poblet & Jonathan Kolieb, *Responding to Human Rights Abuses in the Digital Era: New Tools, Old Challenges*, 54 *STAN. J. INT’L L.* 259, 262 (2018) (discussing how digital tools can support human rights laws).

49. See generally John Perry Barlow, *A Declaration of the Independence of Cyberspace* (Feb. 8, 1996), <https://www.eff.org/cyberspace-independence> [<https://perma.cc/3WAP-LD63>].

50. See *id.*

elsewhere in human affairs.⁵¹ Despite the naïve politics that promoted its early adoption, the term “cyberspace” eventually entered the general lexicon.

What does cyberspace mean to lawyers and the legal academy? Some commentators have used the term interchangeably with the term “Internet,” while others associate cyberspace with the software technologies that enable Internet communications. Katsh notes that online forms of interaction between individuals and other people or businesses are substitutes for physical places, and hence cyberspace experiences are transformed into a culture with values, norms and expectations about acquiring, exchanging, using, and processing information in some ways analogous to those of physical places.⁵² Similarly, the dynamic change and internal diversity of the Internet, along with the complex interdependent interactions among law, norms, cyberspace and the network, have been analogized to a “digital biosphere.”⁵³ A digital persona’s life journey through the digital biosphere model helps to show that, as technology becomes more pervasive in our lives, it becomes interwoven with our norms in a complex, interactive, and dynamic—almost organic—relationship.⁵⁴

Though some critical populations are cut off from many of its features, the digital biosphere is international. Thus, some commentators have pointed out the drawbacks of applying territory-based regulatory models to the brave new world of cyberspace.⁵⁵ Their work suggests that the old world of regulating atoms has little to offer a world of bits and bytes that zip about the planet. For example, David Johnson and David Post have staked out a broadly cyberlibertarian position.⁵⁶ Johnson and Post’s early work argued that the regulation of cyberspace must necessarily be different from the regulation of real space because cyberspace does not have territorial boundaries, but rather it exists simultaneously in multiple jurisdictions.⁵⁷ They asserted that the cost and speed of the transmission of data on the Internet is almost entirely independent of physical location, and users

51. See JACK GOLDSMITH & TIM WU, WHO RULES THE INTERNET? ILLUSIONS OF A BORDERLESS WORLD 131-33 (2006); see also James Grimmelmann, *Anarchy, Status Updates, and Utopia*, 35 PACE L. REV. 135, 144, 146 (2015).

52. See M. Ethan Katsh, *Software Worlds and the First Amendment: Virtual Doorkeepers in Cyberspace*, 1996 U. CHI. LEGAL F. 335, 353 (1996).

53. Arthur J. Cockfield, *Designing Tax Policy for the Digital Biosphere: How the Internet Is Changing Tax Laws*, 34 CONN. L. REV. 333, 334 (2002).

54. See *id.*; see also *infra* Section IV.B.

55. See David R. Johnson & David Post, *Law and Borders—The Rise of Law in Cyberspace*, 48 STAN. L. REV. 1367, 1379-80, 1397 (1996).

56. See *id.*

57. See *id.* at 1370-71.

can evade territorial-based rules by moving to more favorably regulated areas.

According to the Johnson–Post model, cyberspace should hence be treated as a separate “space” with its own distinct laws.⁵⁸ Their cyberlibertarian model rejected a field of regulation as dense or encompassing as that governing “real space” (or “meat space,” a quasi-pejorative popular among cyberpunks). They instead preferred self-regulation whereby cyberspace participants would develop their “own effective legal institutions.”⁵⁹ This point of view proved extraordinarily influential in the U.S., where Congress upended stable fields of law to provide broad immunities from taxation and regulation for leading Internet-based firms and Internet Service Providers. Some effective self-regulatory bodies developed consensus and agreement on Internet hardware and software standards, including the World Wide Web Consortium, the Internet Engineering Task Force, and the Internet Corporation for Assigned Names and Numbers (ICANN).⁶⁰ However, none are capable of addressing the panoply of problems recently identified with Internet politics, economics, and culture.⁶¹

If cyberspace truly is a new realm beyond the reach of states, Internet users may not be subject to rules from states where they are not physically located, even if those states have vital interests in prohibiting or regulating the transactions or communications these “netizens” engage in—a recipe for wholesale law breaking. The Johnson-Post model generally only incorporates the interests of Internet users who, it is argued, have distinct needs that cannot be effectively addressed by territorial-based sovereigns.⁶² But such users also have effects on those who do wish for territorial sovereign protection.⁶³

The Johnson–Post model selectively depicts one version of the Internet (then and today), along with the inherent difficulties in regulating this new forum. The model suffers from normative

58. *See id.* at 1379.

59. *Id.* at 1387.

60. *See generally* A. Michael Froomkin, *Habermas@Discourse.Net: Toward a Critical Theory of Cyberspace*, 116 HARV. L. REV. 749 (2003).

61. For an overview of these problems, *see generally* FRANK PASQUALE, *THE BLACK BOX SOCIETY: THE SECRET ALGORITHMS THAT CONTROL MONEY AND INFORMATION* (2015).

62. *See id.* at 1402 (explaining how certain characteristics of online use require different laws than those applicable to physical geographically defined boundaries).

63. *See* Frank Pasquale, *From Territorial to Functional Sovereignty: The Case of Amazon, L. & POL. ECON. BLOG* (Dec. 6, 2017), <https://lpeblog.org/2017/12/06/from-territorial-to-functional-sovereignty-the-case-of-amazon/> [<https://perma.cc/UGZ9-W3VU>].

problems when it suggests that regulators should, for the most part, maintain a hands-off approach to the Internet. As philosophers are fond of reminding us, an “is” is not necessarily an “ought.”⁶⁴ The fact that the Internet is difficult to regulate does not mean that governments ought not strive to regulate the Internet. For instance, as Goldsmith has noted, “the state in which the harms are suffered has a legitimate interest in regulating the activity that produces the harms.”⁶⁵

That is not to say that statutes and regulations should not evolve in order to adapt to cyberspace. Nor is it meant to deny the value of a legal academic field that explores the unusual issues that have arisen as free expression, jurisdiction, notice, trespass, and other key legal concepts are applied to and tested in online disputes. A classic denial in that vein came from Judge Frank Easterbrook. Easterbrook viewed cyberlaw as an unhelpful disciplinary focus because, he claimed, it led to an overly specialized perspective that removes legal conflicts from their broader context.⁶⁶ He analogized cyberlaw to a fanciful “law of the horse,” which might have tempted legal scholars to stray from the eternal verities of contracts, just war theory, torts, and civil procedure when equine-enabled transport and warfare began to change societies.⁶⁷ Such a focus would seem entirely antiquated today, when cars, trains, and drones have supplanted stagecoaches and cavalries. Under this view, cyberlaw is unhelpful as it fails to illuminate the entire law.

In our view, Easterbrook’s provocative analogy falls apart upon close examination. The Internet and associated “cyber” technologies are important and becoming more dominant now, while horses are not nearly as critical to contemporary economic, political, and cultural infrastructure. The same was true when Easterbrook wrote his article. Moreover, a “law of the horse” does exist in the U.S., in the form of regulations elaborating how the Animal Welfare Act (at the federal level) and various state animal protection statutes (at the state level) regulate the feeding, breeding, racing, keeping, and euthanasia of horses. Libertarians may deplore the administrative state’s “interference” with equine affairs, but that is an ideological position that reflects a *wish* for no law of the horse—not its actuality.

64. See, e.g., Jane Bailey, *Of Mediums and Metaphors: How a Layered Methodology Might Contribute to a Constitutional Analysis of Internet Content Regulation*, 30 *MAN. L.J.* 197, 197 (2004) (arguing that the question as to whether the Internet *can* be regulated should not be conflated with whether it *should* be regulated).

65. Jack L. Goldsmith, *Against Cyberanarchy*, 65 *U. CHI. L. REV.* 1199, 1200 (1998).

66. See Frank H. Easterbrook, *Cyberspace and the Law of the Horse*, 1996 *U. CHI. LEGAL F.* 207, 207-08.

67. See *id.*

As Lawrence Lessig responded to Easterbrook, cyberlaw courses provide valuable insight into the limits of traditional law as a regulator of behavior.⁶⁸ For a student who wanted to practice law in horse racing or similar contexts, classes on the “law of the horse” would be useful. There are far more positions in cyberlaw, and therefore, simply as an instructional element in law schools, we should expect “cyberlaw” to persist. Cyberlaw as a focus of research will also continue be of use to policymakers.

Some law and technology perspectives also respond to Easterbrook’s critique by illuminating the broader relationship between law and all technologies versus focusing on a specific technology (such as information technologies related to the Internet).⁶⁹ Other perspectives rely on mature theories of technology outside of law to assist with legal analysis.

Internet exceptionalists like Post and Johnson and Internet legal deflators like Easterbrook may seem to have little in common. However, a common sensibility has animated both strains of work. Each school has tended toward an instrumentalist point of view, characterizing the Internet as one more way of accomplishing set human ends. To resist calls for regulation, Johnson and Post had to make a *jurisdictional*, not an essentialist, claim about Internet activity.⁷⁰ They ideologically “located” it outside extant sovereigns’ reach.⁷¹ This is a point of view now shared by blockchain enthusiasts who insist on calling that technology “immutable” and “unstoppable.”⁷² Easterbrook’s error was more obvious. He simply assumed that the Internet would enable one more way of commenting, transacting, gambling, the way a horse enabled better transport than

68. See Lawrence Lessig, *The Law of the Horse: What Cyberlaw Might Teach*, 113 HARV. L. REV. 501, 502 (1999).

69. See Cockfield, *supra* note 21, at 387-88; see also *infra* Part IV.

70. See Johnson & Post, *supra* note 55, at 1369-70.

71. This was a problematic approach insofar as it downplayed the materiality of Internet infrastructure, which is vulnerable to state interference, and in many cases ought to be. Moreover, as Julie Cohen diagnosed, “[t]he cyberspace metaphor does not refer to abstract, Cartesian space, but instead expresses an experienced spatiality mediated by embodied human cognition. Cyberspace in this sense is relative, mutable, and constituted via the interactions among practice, conceptualization, and representation.” Julie E. Cohen, *Cyberspace as/and Space*, 107 COLUM. L. REV. 210, 210 (2007).

72. See Angela Walch, *The Bitcoin Blockchain as Financial Market Infrastructure: A Consideration of Operational Risk*, 18 N.Y.U. J. LEGIS. & PUB. POL’Y 837, 861 (2015) (critiquing ANDREAS M. ANTONOPOULOS, *MASTERING BITCOIN: UNLOCKING DIGITAL CRYPTOCURRENCIES* (2014) and Campbell R. Harvey, *Bitcoin Myths and Facts* 5 (Aug. 18, 2014) (unpublished manuscript), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2479670 [<https://perma.cc/X9LA-9ETF>]).

walking. He did not appreciate the ways in which such activities could be fundamentally changed by their digitization in contexts of rapid communication and information sharing.

B. Code is/as/and Law

Lawrence Lessig's groundbreaking book *Code and Other Laws of Cyberspace* offered a nuanced "middle way" between the "nothing new" approach of Easterbrook to cyberlaw and the "totally new" approach taken by the cyberlibertarians.⁷³ Observing that software physically preventing copying of a DVD may be just as effective as prohibitions under copyright law, Lessig maintained that code could act as a law of its own but also could be shaped by law. Lessig also observed the ways in which technology and law could reinforce one another. For example, if governments are worried that consumers will access pornography in public libraries, they could pass a law to mandate the installation of filtering software on library computers, which would inhibit access.

Lessig's views represent a clear articulation of an instrumentalist approach to law and technology (as well as norms). Lessig's work embodies instrumentalism because the pragmatic analogy between code and law also embraces an even broader set of modalities of control, including social norms and markets, in Lessig's terms. By presenting very broad categories of human interaction as pragmatically analogous methods of generating certain results, Lessig helped set discourse on law and technology in the direction of social engineering.⁷⁴

This, again, is a legacy of Chicago: Just as his one-time Chicago colleague Cass Sunstein pressed the ultra-utilitarian ideal of a "cost-benefit state," Lessig's modalities could be seen as varied tools to maximize social welfare. And just as Sunstein's and Lessig's Chicago forebears had advanced economics as a higher authority than law, set to displace the common law and statutes where they proved "inefficient," Lessig characterized social norms, markets, and technology as all in some way the co-equal of law—its potential replacement, rather than phenomena ideally subject to its shaping

73. See generally LAWRENCE LESSIG, *CODE AND OTHER LAWS OF CYBER SPACE* (2000).

74. This path was later more fully realized in DAVID HOWARTH, *LAW AS ENGINEERING: THINKING ABOUT WHAT LAWYERS DO* (2013).

power.⁷⁵ Lessig has long since left Chicago for Harvard, in part to pursue research on corruption.⁷⁶

The “code is law” perspective recognizes that government technical interventions may lead to socially ambivalent results—requiring further intervention.⁷⁷ As noted, governments are embracing or developing powerful surveillance technologies to promote national security interests. But this approach raises the risk that abusive state practices could take place, inhibiting important democratic values. Governments could counter-balance this risk by mandating the use of other technologies.⁷⁸ With respect to concerns surrounding state surveillance, governments could, for example, pass legislation that would: (1) create digital trails that track how state agents use technologies to collect and store personal information; (2) mandate the “scrubbing” of personally identifying information from large databases; and (3) provide for “low tech” solutions such as publishing lists of public spaces that are subject to police surveillance.⁷⁹

This cyborg-ish mix of law and technology may seem to vindicate the instrumentalist understanding of their interchangeability.⁸⁰ However, substantivists would be quick to emphasize that technological and legal developments can change (rather than simply better or worse serve) the social *goals* of mass surveillance and shape individuals’ expectations of privacy and free expression.⁸¹ Scholars are obliged to study past patterns of such effects if they are to fairly advise on the true impact of changing balances of law, technology, markets, and norms in various fields.

75. Note that James Buchanan took the Chicago approach one step further, developing an economics that commended the uprooting of even constitutional law when it stood in the way of a certain vision of economic order. See NANCY MCLEAN, *DEMOCRACY IN CHAINS: THE DEEP HISTORY OF THE RADICAL RIGHT’S STEALTH PLAN FOR AMERICA* 155 (2017).

76. See generally Lawrence Lessig, *What an Originalist Would Understand “Corruption” to Mean*, 102 CALIF. L. REV. 1 (2014).

77. See Arthur J. Cockfield, *Who Watches the Watchers? A Law and Technology Perspective on Government and Private Sector Surveillance*, 29 QUEEN’S L.J. 364, 400 (2003).

78. See *id.* at 400-02.

79. For a survey of technological approaches to “watch the watchers,” see generally Danielle Keats Citron & Frank Pasquale, *Network Accountability for the Domestic Intelligence Apparatus*, 62 HASTINGS L.J. 1441 (2011).

80. See Tom C.W. Lin, *The New Investor*, 60 UCLAL. REV. 678, 693 (2013).

81. See *infra* Subsection III.A.2.

C. The Problematic Results of Cyberlaw Instrumentalism

Even the earliest technological developments—fire, aqueducts, roads—have impacted human lives, customs, and laws. Technology can have a gradual impact on human lives, such as improvements in home insulation over the past few centuries. Alternatively, it can provide a jolt that paves the way for entire new eras of human development, from the widespread uses of axes and mortar for stone building to indoor plumbing, the steam engine, electricity, automobiles, and the Internet. The latter developments raise the question whether technology developments follow a continuous pattern or whether they usher in entirely new technological eras. To promote optimal policy outcomes, cyberlaw discussions asked whether “traditional” laws would suffice or whether entirely new approaches are needed. Similarly, observers began to examine in a more critical fashion how the direct regulation of software and hardware technologies could promote optimal legal solutions.

The code-is-law school of thought has recognized that technology imposes constraints on the behavior of individuals and businesses. Thus, there is no simple libertarian calculus to equate deregulation of technology with an increase in freedom. In a world increasingly mediated by complex technologies, broader areas of technology could be subject to legal regulation as an effective mechanism to protect interests and to enhance the liberty of those constrained by current controllers of technology.⁸²

Unfortunately, this lesson of code is law was not the main takeaway of the debates arising out of Lessig’s and related works. Those emphasizing cyberspace as a new place, ideally transcending or existing outside past forms of regulation, advanced a set of normative commitments that tended to counterbalance the insights arising out of code-is-law theory. Such intuitions supported sweepingly deregulatory interventions—such as the United States’

82. See ROBERT L. HALE, *FREEDOM THROUGH LAW: PUBLIC CONTROL OF PRIVATE GOVERNING POWER* (1952) (calling for “public control of private governing power”); see also Warren J. Samuels, *The Economy as a System of Power and Its Legal Bases: The Legal Economics of Robert Lee Hale*, in *ESSAYS IN THE HISTORY OF HETERODOX POLITICAL ECONOMY* 184 (1992) (quoting Robert L. Hale, Hale Papers 32 (unpublished works) (Folder 93-1) (“There is government whenever one person or group can tell others what they must do and when those others have to obey or suffer a penalty.”)); Frank Pasquale, *Platform Neutrality: Enhancing Freedom of Expression in Spheres of Private Power*, 17 *THEORETICAL INQUIRIES* L. 487, 487 (2016) (“[P]rivacy, competition, and consumer protection laws. . . . enable a more vibrant public sphere. . . . [by] defus[ing] the twin specters of monopolization and total surveillance, which are grave threats to freedom of expression.”).

Communications Decency Act § 230, which insulated online intermediaries from many forms of liability stemming from published works.⁸³ The code-is-law approach tended to legitimate such interventions, by implying that so many things could take the place of law (such as market forces, social norms, or software) that law itself was not that important to the development of the Internet.

For example, if you don't like the way in which Facebook, Google, or Twitter handles right-wing extremism or defamation, call them out on social media to evoke social norms. Or boycott them to hit their profits. Or unleash automated bots that can evade their manipulation detectors to shape the platforms in ways you would like. At various points, libertarian thinkers and think tanks have advanced each of these strategies as ways of promoting spontaneous order in cyber-realms. But such approaches have repeatedly failed to bring about the type of emancipatory and egalitarian online experience promised by the Internet's earliest boosters. The main problem, as the next section shows, is that legal scholars on both sides of the code-as-law and cyberspace-as-place debates tended to adopt a narrowly instrumentalist understanding of technology. A more substantivist approach is needed.

III. SUBSTANTIVISM AS AN ALTERNATIVE TO INSTRUMENTALISM

Instrumental perspectives generally view technology as a neutral tool. Like economists viewing purchasing behavior as a "revealed preference" for certain states of affairs,⁸⁴ instrumentalists tend to bless (or at least accept) technological adoption patterns as the result of uncoerced, individual choice. The structural background, which made some choices prominent and others occluded, some cheap and easy, and others expensive and hard, remains in the background.

Despite its blindspots, given the influence of methodological individualism in the contemporary Anglosphere legal academy, instrumentalism may seem like the best way to develop a social theory of law and technology. However, there is an alternative. Substantivist theories analyze how technology can transform human experience, identity, and aims.⁸⁵ Substantivists particularly worry about how

83. See Communications Decency Act, 47 U.S.C. § 230 (2012).

84. See Marcel K. Richter, *Revealed Preference Theory*, 34 *ECONOMETRICA* 635 (1966).

85. See generally Frank Pasquale, *Technology, Competition, and Values*, 8 *MINN. J.L. SCI. & TECH.* 607 (2007) (discussing the technological transformation of aims).

technological “structure” can subvert interests that have been traditionally protected by law.

We acknowledge up front there are now thousands of law and technology works, and any effort to boil these down to common themes is invariably reductionist. However, synthesis should prove particularly useful in the field of law and technology to show areas of commonality within over-arching analytical approaches.

A. Theoretical Perspectives

Many disciplines have developed mature theories of technology.⁸⁶ Social theories of technology are fruitfully divided into two groups: those that rely on so-called instrumental theories or perspectives on technology and those that follow substantive theories about technology.⁸⁷ In outlining these theories, we are laying the foundation for an academic contribution inspired by John Maynard Keynes’s observation that “[p]ractical men, who believe themselves to be quite exempt from any intellectual influence[] are usually the slaves of some defunct economist. Madmen in authority, who hear voices in the air, are distilling their frenzy from some academic scribbler of a few years back.”⁸⁸ In other words, such an examination allows us to surface the deep ideological structure of argument in areas as seemingly *au courant* and technocratic as cryptocurrency regulation.⁸⁹

86. This approach is used by many non-legal academic disciplines. *See, e.g.*, NASSER BEHNEGAR, LEO STRAUSS, MAX WEBER, AND THE SCIENTIFIC STUDY OF POLITICS (2003) (discussing different scientific approaches to the study of political science); PAUL STONEMAN, THE ECONOMICS OF TECHNOLOGICAL DIFFUSION (2002) (providing an economist’s perspective on theories of technology); LANGDON WINNER, AUTONOMOUS TECHNOLOGY: TECHNICS-OUT-OF-CONTROL AS A THEME IN POLITICAL THOUGHT (1977) (analyzing the politics of technology and criticizing the uncritical acceptance of new technologies); Hughes, *supra* note 29 (setting out historians’ views on technology theories). At times, academic disciplines have developed more focused theories involving certain technologies, which co-exist with broader theories of technology. For example, a sociologist might explore the impact of information technologies on workplace environments within broader attempts to examine technological interactions with social structures. *See, e.g.*, THE SOCIAL SHAPING OF TECHNOLOGY (Donald MacKenzie & Judy Wajcman eds., 2d ed. 1999).

87. *See, e.g.*, FEENBERG, *supra* note 4, at 5-6.

88. JOHN MAYNARD KEYNES, THE GENERAL THEORY OF EMPLOYMENT, INTEREST AND MONEY 383 (1936).

89. Clifford Geertz’s work in “ideology as a cultural system” is our guide here, as is the work of “interpretive social science” in general. *See, e.g.*, Charles Taylor, *Interpretation and the Sciences of Man*, in INTERPRETIVE SOCIAL SCIENCE: A READER 25 (Paul Rabinow & William M. Sullivan eds., 1979); Paul Ricoeur, *The*

Generally speaking, instrumental theorists are less interested in the broader social, cultural, and political impacts of technology than they are in its role as a tool helping individuals pursue their own ends.⁹⁰ The instrumentalists are often identified with strains of thought that prioritize individual autonomy or agency in matters of technology, thanks primarily to an emphasis on human willpower to decide whether to adopt technologies. Many of these conceptions of technology rest on the optimistic premise that technology change produces largely beneficent results for individuals and their communities, since technology adoption reveals a preference for it rather than coercion into using it.⁹¹

In contrast, substantive theories of technology emphasise the ways in which technological systems (or “structure”) can have a substantive impact on individual and community interests that may differ from the technologies’ intended impact. Technology may change values and goals, not merely help individuals achieve them.⁹² Substantive theorists sometimes emphasise how technological structure can overcome human willpower or even institutional action. By “structure,” it is not meant that machines control us, but rather that technological developments can subtly (or unsubtly) undermine important interests that the law has traditionally protected.

Both instrumental and substantive perspectives on technology can inform theories of the relationship between law and technology. There can be very fruitful conversations within each school. However, debates among adherents to different schools are likely to founder because they share so few grounding commitments. As Gadamer observed, there is a need for some shared horizons to engage in meaningful conversation.⁹³

Model of the Text: Meaningful Action Considered as a Text, in INTERPRETIVE SOCIAL SCIENCE: A READER, *supra*, at 73.

90. This Part draws from an earlier work. See generally Arthur J. Cockfield & Jason Pridmore, *A Synthetic Theory of Law and Technology*, 8 MINN. J.L. SCI. & TECH. 475 (2007).

91. For an example of coercion to use technology, see generally Jennifer A. Chandler, “Obligatory Technologies”: *Explaining Why People Feel Compelled to Use Certain Technologies*, 32 BULL. SCI. TECH. & SOC’Y 255 (2012) (explaining the requirements to undergo back surgery or use genetically modified crops); Frank Pasquale, *Cognition-Enhancing Drugs: Can We Say No?*, 30 BULL. SCI. TECH. & SOC’Y 9 (2010).

92. See generally Pasquale, *supra* note 85.

93. See generally HANS-GEORG GADAMER, TRUTH AND METHOD (1975). “[I]nterpretation is the common ground of interaction between text and interpreter, by which each establishes its being . . . interpreter and text are indissolubly linked as a matter of being.” For applications of Gadamer to legal interpretation, see William N. Eskridge, Jr., *Gadamer/Statutory Interpretation*, 90 COLUM. L. REV. 609, 617-18 (1990).

1. *Instrumental Perspectives on Technology as a Neutral Tool*

The instrumentalist perspective tends to articulate optimistic conceptions of a society that has taken full advantage of the technological tools at its disposal. A number of theorists, particularly those in management studies and economics, hold that technology is simply a tool—an instrument of the social, political, or economic group, or of the individual that chooses to develop and use a certain technology.⁹⁴ Entrenched in boardrooms, the technology trade press, and industry-funded think tanks, this instrumental perspective is the most widely accepted view of technology.⁹⁵ “It is [rooted] in many social sciences and bureaucratic organizations, from business to government to non-profit organizations, and pervades everyday [discussions] regarding technology in the larger society.”⁹⁶ This perspective on technology holds that technology is neutral, solely serving the intended purposes held for it by its users.⁹⁷

The phrase “guns don’t kill people, people kill people” reflects the instrumentalist mindset.⁹⁸ When there is a mass shooting in the U.S., gun rights advocates blame individuals—or their mental health issues—for the massacre. Similarly, those who wish to immunize peer-to-peer file sharing networks call the “dual use” of the technology a hallmark of its neutrality.⁹⁹ Promoters of net neutrality advance a normative vision of the “pipes” of the Internet eschewing any favoritism as to which content they prioritize, delay, or degrade. Neutrality is not merely a descriptive term, but in some technological settings a liberal virtue, as it is at bottom procedural, appealing to our sense of fairness in process, rather than any more substantive notion of optimal results.

For instrumentalists, the use of certain forms of technology may preclude the use of other technologies, but these trade-offs are calculable choices rationally arrived at through different forms of debate.¹⁰⁰ If technology itself affects these debates, it is once again

94. See generally CLAYTON M. CHRISTENSEN, *THE INNOVATOR’S DILEMMA: WHEN NEW TECHNOLOGIES CAUSE GREAT FIRMS TO FAIL* (1997) (leading the “disruptionist” school in business studies).

95. See generally Cockfield & Pridmore, *supra* note 90 (discussing instrumental and substantive perspectives and theories of technology).

96. *Id.* at 480.

97. See *id.*

98. See generally JOHN R. LOTT, *MORE GUNS, LESS CRIME* (1998).

99. Alfred C. Yen, *What Federal Gun Control Can Teach Us About the DMCA’s Anti-Trafficking Provisions*, 2003 WIS. L. REV. 649, 673 (2003).

100. See, e.g., WILLIAM GATES, *THE ROAD AHEAD* 252 (1995). Authors who espouse this perspective, albeit rarely explicitly, clearly prefer public and democratic debate.

characterized as neutral. Indeed, a good deal of Internet triumphalism characterized the medium as the most neutral public sphere of all, enabling anyone to grab a digital soapbox and popularize their ideas.¹⁰¹

This understanding of technology strongly emphasizes human agency and downplays the potential limitations of technological systems (i.e., structures). For the instrumentalists, human beings can and do direct the use of technology, and the fears of technological tyranny overcoming human autonomy are unfounded. Some instrumental approaches, such as those found in the management sciences, ignore questions of individual autonomy because they are exclusively focused on enhancing efficiency, leaving the social questions to other disciplines.¹⁰²

This instrumental view can be seen as a backdrop to many of the perspectives that articulate the arrival of a new information society. One of most well-known of these perspectives is Alvin Toffler's *The Third Wave*, in which he articulates three "waves" of technological innovation: agricultural, industrial, and informational.¹⁰³ The last of these, in whose throes we presumably remain today, has transformed our world into one oriented toward and almost completely dependent upon computer communication technologies.

Instrumentalist perspectives are often optimistic about technology. When the "extensions of man" are characterized as ways of realizing (rather than thwarting or changing) persons' aims, it is hard not to get excited about their dissemination and wary of their regulation or limitation.¹⁰⁴ Sociological theorists like Manuel Castells share this optimism to differing extents, but his is a cautious optimism. The social theories concerned with technology tend to be a bit more pessimistic about potentials for technology. The predominance of technological structure as a continuation of previous modes of social and political practice that overwhelms individual will in a dehumanizing way is also apparent in the works of sociologists of technology.

2. *Substantive Theories of Technology*

At this point, it may be helpful to offer examples of how technologies can have a political, social, cultural, or other substantive

101. Reno v. ACLU, 521 U.S. 844 (1997).

102. See, e.g., Rias J. van Wyk, *supra* note 7, at 19-31.

103. See ALVIN TOFFLER, *THE THIRD WAVE* 26 (1980).

104. See ITHIEL DE LA SOLA POOL, *TECHNOLOGIES OF FREEDOM* 226-27 (1983); see also ADAM THIERER, *PERMISSIONLESS INNOVATION: THE CONTINUING CASE FOR COMPREHENSIVE TECHNOLOGICAL FREEDOM* 2-6 (2014).

impact on society so that they are not merely neutral tools. We offer examples of substantive theories of technology, to counterbalance the tilt of Part II's cyberlaw discussion toward instrumentalist approaches.¹⁰⁵

Numerous ways exist for engaging in a sociological analysis of technology. Some of these are rooted in the earliest traditions of sociological analysis, such as those associated with Karl Marx, Max Weber, Emile Durkheim, and George Simmel. Others have begun to reorient the field of study beyond these modes of inquiry and toward approaches less reliant upon their sociological forbearers.¹⁰⁶ The examination of the relationship between law and technology at times draws from critical theories that purport to clear away the fog that occurs when traditional legal analysis fails to illuminate the important interests at stake. For instance, Froomkin has discussed how critical theories help "people understand their true interests and by helping them escape from ideological coercion."¹⁰⁷

The Frankfurt Institute for Social Research founded in 1923 in Frankfurt, Germany was a potent source of critical theory. Two of its members, Max Horkheimer and Theodor Adorno, offer provocative critiques of culture in their book *Dialectic of Enlightenment*.¹⁰⁸ Throughout this text, Horkheimer and Adorno argued that the Enlightenment, rather than liberating people from fear, has produced new forms of authority and control.¹⁰⁹

The underlying emphasis in this text is that technologies, and in particular new media technologies, are designed not to encourage human liberation and freedom but rather to set limiting parameters in

105. See *supra* Part II. For a discussion concerning how technologies can have a substantive impact (e.g., highway overpass bridges deliberately built low to prevent low-income transportation, like buses, from travelling out of New York City toward the homes of the wealthy on Long Island), see Langdon Winner, *Do Artifacts Have Politics?*, 109 DAEDALUS 121, 123-24 (1980).

106. The following review does not purport to offer a comprehensive examination: for instance, we do not review sociological approaches that rely on Social Systems theory or that of Critical Realism.

107. Froomkin, *supra* note 60, at 760-64. For a review of different theories of technology, including those that depart from the instrumental theory, see Samuel Trosow, *The Ownership and Commodification of Legal Knowledge: Using Social Theory of the Information Age as a Tool for Policy Analysis*, 30 MAN. L.J. 417, 419-20 (2004) (arguing against the instrumental theory of technology); see also James Boyle, *The Politics of Reason: Critical Legal Theory and Local Social Thought*, 133 U. PA. L. REV. 685, 687-88 (1985) (describing the development of legal theories that share assumptions concerning the use of social power in apparently rational discourse).

108. See MAX HORKHEIMER & THEODOR W. ADORNO, *DIALECTIC OF ENLIGHTENMENT* (John Cumming trans., 2d ed. 1995).

109. See *id.* at 3.

which human beings can express themselves. The “freedom to choose an ideology . . . everywhere proves to be freedom to [choose what is always] the same,”¹¹⁰ and technology is simply another means by which to perpetuate capitalist forms of oppression and domination.

Fellow Frankfurt School critical theorist Herbert Marcuse is even more explicit about the role of technology in his work *One Dimensional Man*.¹¹¹ In the text, Marcuse holds as a thesis the notion that society has been collapsed into one dimension of thought or action—a technical and rational dimension.¹¹²

One of the more recent critical texts is Andrew Feenberg’s *Transforming Technology: A Critical Theory Revisited*.¹¹³ Unlike Frankfurt School theorists like Horkheimer, Adorno and Marcuse, who explicitly and implicitly posit the predominance of structural control, Feenberg attempts to reinstate a notion of human agency and engage in “politics of technological transformation.”¹¹⁴ Feenberg believes that critical theorists’ despair about inevitable technological domination in the 1970s was a wrong turn and that critical theory needs to engage in a more interventionist strategy.¹¹⁵

Feenberg continued this approach in 2017’s *Technosystem*, which takes issue with Christian Fuchs and Jodi Dean for, *inter alia*, essentializing current patterns of power on the Internet (particularly those that centralized in major Internet platforms and Internet Service Providers) as inevitable concomitants of the technology.¹¹⁶ Feenberg usefully distinguishes between critiques of technology itself, as opposed to present configurations of technology. However, he might have chosen better targets. Dean is quite explicit in her work *Blog Theory* that “communicative capitalism,” as opposed to social networking itself, is at least in part responsible for what she characterizes as the depoliticizing and narcotizing aspects of online experiences. Both Dean and Fuchs promote a more public-spirited Internet eventually coming to replace corporate-dominated systems.¹¹⁷

110. *Id.* at 135-36.

111. *See generally* HERBERT MARCUSE, ONE-DIMENSIONAL MAN: STUDIES IN THE IDEOLOGY OF ADVANCED INDUSTRIAL SOCIETY (1964).

112. *See id.* at xxvi (explaining the one-dimensional man).

113. *See* ANDREW FEENBERG, TRANSFORMING TECHNOLOGY: A CRITICAL THEORY REVISITED (2002).

114. *Id.* at 13.

115. *See id.* at 18.

116. *See* ANDREW FEENBERG, TECHNOSYSTEM: THE SOCIAL LIFE OF REASON 89-99 (2017).

117. *See generally* JODI DEAN, BLOG THEORY: FEEDBACK AND CAPTURE IN THE CIRCUITS OF DRIVE (2010); CHRISTIAN FUCHS, INTERNET AND SOCIETY: SOCIAL THEORY IN THE INFORMATION AGE (2007).

3. Weber's "Iron Cage" and Ellul's "Technique"

The views of two late law professors, Max Weber and Jacques Ellul, have proven to be particularly influential. Their writings share some of the common elements of substantive theories of technology from which our substantivist perspective on law and technology is drawn.

In the *Protestant Ethic and the Spirit of Capitalism*,¹¹⁸ Max Weber suggests that Puritan ethics and ideas influenced the development of capitalism.¹¹⁹ Weber describes capitalism as creating an organizational shift towards rationalization and bureaucratization from a value-oriented organization to a goal-oriented organization. As a result, the increased rationalization of human life traps individuals in an "iron cage" of rule-based, rational control: The new economic order "is now bound to the technical and economic conditions of machine production which to-day determine the lives of all individuals who are born into this mechanism . . . with irresistible force."¹²⁰

Though Weber's notion of the iron cage—the restrictive rationalization of human life that society has created for itself—has filtered throughout many contemporary texts, it is perhaps best rearticulated in light of the theoretical position of Jacques Ellul. Ellul suggests in his widely cited text, *The Technological Society*, that current society and society's future will be one in which people become increasingly dependent on machines.¹²¹ This is a society in which people order their lives to accommodate the demand of rationality and efficiency, the mode of operation upon which machines exist.¹²²

In his numerous texts, Ellul questions whether such a society has indeed progressed. He contends it has not, and that the advent of the technological environment has seriously impinged upon human

118. MAX WEBER, *THE PROTESTANT ETHIC AND THE SPIRIT OF CAPITALISM* (Talcott Parsons trans., 1958).

119. *See id.*

120. *Id.* at 123. Weber rejects the metaphor of capitalism as a "light cloak" that can be thrown aside in favor of the metaphor of an "iron cage." *Id.* For an effort to link Weber's views more directly with technology concerns, see Terry Maley, *Max Weber and the Iron Cage of Technology*, 24 *BULL. SCI. TECH. & SOC'Y* 69 (2004) (claiming that Weber should be reassessed as a compelling critic of science and technology). Importantly, Maley suggests that there is a potential for human agency found within Weber's work and that one need not take the same direction as Ellul. *See id.* at 74. Rather Weber "does not foreclose the possibility of meaningful intervention" in his postulation of the iron cage. *Id.* at 84.

121. *See* JACQUES ELLUL, *THE TECHNOLOGICAL SOCIETY* 305 (John Wilkinson trans., 1964).

122. *See id.* at 74.

freedom and autonomy.¹²³ In his writing, the social, political, and economic worlds are seen in terms of epochal transitions, and Ellul was concerned about what he saw as a particularly dire transition to an oppressive epoch—that of the technological society.¹²⁴

In this technological society, all of life is being subsumed by “technique” described as “the totality of methods rationally arrived at and having absolute efficiency . . . in every field of human activity.”¹²⁵ In this environment, everything is measured against its rationality and efficiency.

4. *Technological Determinism and Recent Efforts*

One of the underlying concerns in most substantive theories of technology is the notion of technological determinism.¹²⁶ These theories frame technology, to greater or lesser extents, as inherently possessing a structure that in turn produces a society that must act and exist in certain ways.¹²⁷ Modern technologies, as suggested by Ellul and others, are the real culprits in enhancing this determinism.¹²⁸

Critics assert that some of the above-noted substantive approaches can be too deterministic, because they attribute too many of *society's* current features to the *technology* it adopts. More recent works have tried to address the issue of technological determinism by trying to assess its complexities in a more comprehensive manner. For Manuel Castells, the transformation towards information capitalism is one in which the social, economic, and political worlds have become centralized around networks that link people, institutions, and countries.¹²⁹ This is “the network society” we now dwell within, and it is largely a result of the development of information and communication technologies such as the Internet and mobile phones that enable communication and the transmission of information and

123. See *id.* at 138.

124. See JACQUES ELLUL, WHAT I BELIEVE 89, 135 (Geoffrey W. Bromily trans., 1989).

125. ELLUL, *supra* note 121, at xxv.

126. See *id.* at xvii.

127. See *id.* at 138, 406.

128. See generally *id.* Martin Heidegger’s *The Question Concerning Technology and Other Essays*, provides another well-known view that technology is interwoven in complex ways with individual identities so that it can structure or frame individual choices. See generally MARTIN HEIDEGGER, THE QUESTION CONCERNING TECHNOLOGY AND OTHER ESSAYS (William Lovitt trans., 1977).

129. See MANUEL CASTELLS, THE RISE OF THE NETWORK SOCIETY 18-22 (1996).

ideas to occur on an unprecedented global scale.¹³⁰ By shifting the focus in social analysis towards that of a network, Castells has articulated a new way of understanding the connection between humanity and technology.¹³¹ Castells' work places people and their artifacts in a mutually bound relationship.¹³²

In addition to focusing on networks as a unit of analysis (like Castells does), Science and Technology Studies (STS) aim to understand "science and technology as social relations and as socially constructed."¹³³ So while Castells gives us a sense of how important networks are to technology and vice versa, STS gives us a sense of the complexity of social structures behind the production, distribution, and consumption of science and technology. According to STS, we can learn more about technology by paying attention to the processes by which technologies are made and the myriad ways in which these technologies may be put to use, which vary in degree from the intentions or original design.¹³⁴ This suggests that science and technology developments are driven by social relationships and networks as well as formalized practices and the employment of scientific methodology. Principally, STS demonstrates that scientific and technological practices are far more socially nuanced and complex than dominant public perceptions and presentations of these practices suggest.

As for a theoretical framing of these issues, one theory articulated by a number of STS researchers is the Actor-Network Theory (ANT).¹³⁵ ANT posits that the work of "technoscience," a term that indicates the interdependence of science and technology, is about

130. MANUEL CASTELLS, *THE INTERNET GALAXY: REFLECTIONS ON THE INTERNET, BUSINESS, AND SOCIETY* 2 (2001).

131. *See id.* at 2-3.

132. *See id.* at 2.

133. WENDA K. BAUCHSPIES, JENNIFER CROISSANT, & SAL RESTIVO, *SCIENCE, TECHNOLOGY, AND SOCIETY: A SOCIOLOGICAL APPROACH* 1 (2006). *See generally* *THE SOCIAL CONSTRUCTION OF TECHNOLOGICAL SYSTEMS: NEW DIRECTIONS IN THE SOCIOLOGY AND HISTORY OF TECHNOLOGY* (Wiebe E. Bijker, Thomas P. Hughes, & Trevor Pinch eds., 2012).

134. By way of example, cellular phones were designed to enable wireless communications, but because technologies were needed to calculate the physical location of the cell phone to work, they are also now used as a government tracking devices to the extent that state agents can access telephone company records that track the geographic location of the phone's usage. *See, e.g., In re Application for Pen Register and Trap/Trace Device with Cell Site Location Auth.*, 396 F. Supp. 2d 747, 754 (S.D. Tex. 2005) ("While the cell phone was not originally conceived as a tracking device, law enforcement converts it to that purpose by monitoring cell site data.").

135. *See* SERGIO SISMONDO, *AN INTRODUCTION TO SCIENCE AND TECHNOLOGY STUDIES* 65 (2d ed. 2004).

the creation of larger and stronger networks. For ANT, these networks are heterogeneous, including “[b]oth human and non-humans [that] have *interests* that . . . need to be accommodated.”¹³⁶ Under this view, technology and technological processes help construct social situations, just as human beings do.

The relationship between technology and history is likewise complex: Technological development and use have many outcomes. Technology is not given to one specific future, despite Ellul’s dire warnings of a social world in which technique dominates. Nor is technology solely a slave to capitalist enterprises as some sociological perspectives might suggest. As opposed to a relatively strict technological determinism, notions of a “soft determinism” remain tenable.¹³⁷ Thus, technologies may be seen as embedded in a particular “technological frame[]” that serves to guide or configure future actions and relationships with those technologies, their users, and their subjects.¹³⁸ Overall, STS demonstrates that there is an interrelation between historical social development and the development of technology. Rather than suggesting that one drives the other (a reductionist critique of the perspectives of both instrumentalism and technological determinism), STS seeks a middle ground, seeing history and technological development as intertwined.

136. *Id.* at 81. The goal of these networks is to act together to achieve a particular and consistent effect in a machine-like fashion. *See id.* at 65. The goal may likewise be to produce particular facts, in which the network is employed to ensure that the components are in agreement. *See id.* at 82. Empirical research informed by ANT tends to focus both on the interests of the actors being examined (human, machine, or artifact) and the socially inscribed process of “translating” these interests. *See id.* In both scientific and technological endeavours, ANT highlights the very social nature of the work that is involved in the relationships that exist or are made to exist between objects and their representations. *See id.* at 82.

137. *See* Arthur J. Cockfield, *Individual Autonomy, Law, and Technology: Should Soft Determinism Guide Legal Analysis?*, 30 BULL. SCI. TECH. & SOC’Y 4, 6 (2010).

138. *See* SISONDO, *supra* note 135, at 103. Technological frames are built up after periods of “[i]nterpretive [f]lexibility,” in which a given technology can be seen as having numerous potential trajectories. *See id.* at 143. STS typically points out that in the end the social expectations and the design of a given technology begin to coalesce around a singular purpose and expectation. The technological frame and the reduction in interpretive flexibility serve to both configure the way a particular technology is able to be used as well as configure the user of that technology by setting the parameters under which the technology may be socially expected to be used. *See id.* at 87. This view is consistent with views of observers who assert that technology developments cannot be separated from social, cultural, economic, and political processes. To a certain extent, this view departs from what has been called the instrumental theory of technology where technologies should be adopted as long as they promote an instrumental purpose that enhances efficiency. *See* FEENBERG, *supra* note 33, at 5.

IV. REVISITING CYBERLAW FROM A SUBSTANTIVIST PERSPECTIVE

Scholars have recognized the need for a more holistic perspective in cyberlaw and broader law and technology analysis.¹³⁹ In Part II, we discussed several shortcomings of dominant, instrumentalist perspectives in cyberlaw. A foundational debate for the field—whether cyberlaw was an entirely new area, or merely a “[l]aw of the [h]orse” destined to be absorbed into traditional doctrinal categories—obscured the narrow methodological foundations of the origins of the field.¹⁴⁰ Commentators modeled quintessentially legal dilemmas as essentially engineering problems—to be solved via principles of maximization of some agreed upon end, be it efficiency, innovation, or progress.¹⁴¹ The common reception of Lawrence Lessig’s “modalities” approach further muddied the waters by modeling computer code as a functional equivalent to law, markets, architecture, or norms.¹⁴²

Social theory, science and technology studies, and sociological approaches to technology have become increasingly influential in cyberlaw scholarship.¹⁴³ These approaches have complemented the economics- and engineering-inspired views of what might be termed “Cyberlaw 1.0.” While it is impossible to survey this entire field, beginning with Section IV.A, we show in this penultimate section the ways in which these substantivist approaches, which recognize the

139. See generally Frank Pasquale, *Technology, Competition, and Values*, 8 MINN. J.L. SCI. & TECH. 607 (2007); Cockfield, *supra* note 21.

140. See generally Easterbrook, *supra* note 66.

141. See generally DAVID HOWARTH, *LAW AS ENGINEERING: THINKING ABOUT WHAT LAWYERS DO* (2013). This approach is troubling because there are so many ways in which problem definition—a given for engineers—is contested in so many legal and political contexts. Moreover, the field of engineering lacks many of the safeguards necessary for such modeling. See, e.g., David A. Banks, *Engineered for Dystopia*, BAFFLER (Jan. 24, 2018), <https://thebaffler.com/latest/engineered-for-dystopia-banks> [<https://perma.cc/Y8BW-NVFF>] (“Unlike medical professionals who have a Hippocratic oath and a licensure process, or lawyers who have bar associations watching over them, engineers have little ethics oversight outside of the institutions that write their paychecks. That is why engineers excel at outsourcing blame: to clients, to managers, or to their fuzzy ideas about the problems of human nature.”). See generally DIEGO GAMBETTA & STEFFEN HERTOG, *ENGINEERS OF JIHAD* (2016) (describing the propensity of engineers to join fundamentalist and extremist organizations).

142. See generally Lessig, *supra* note 68.

143. See Lyria Bennett Moses, *Understanding Legal Responses to Technological Change: The Example of In Vitro Fertilization*, 6 MINN. J.L. SCI. & TECH. 505, 517 (2005); Kieran Tranter, ‘The History of the Haste Wagons’: *The Motor Car Act 1909 (VIC), Emergent Technology and the Call for Law*, 29 MELB. U. L. REV. 843, 875-79 (2005) (attempting to identify common links among legal responses to innovations).

non-linear and complex inter-relationship between technology and individuals as well as their communities, help balance the cyberlaw conversation. In Section IV.B, we set out how the conceptual model of the “digital persona” acknowledges a broader role for constitutional, human rights and other laws in holistically protecting digital personhoods. Section IV.C explores a case study in Internet law—regarding the regulation of robotic “expression” online—to show the importance of balancing instrumentalist approaches to law and technology analysis with more substantive ones.

A. The Instrumentalist–Substantivist Divide

To fully understand the differences between an instrumentalist and a substantivist approach to law and technology, a chart of contrasts is helpful. The chart below summarizes some instructive, ideal-typical contrasts that will be elucidated in the rest of this section:

| | Instrumentalist | Substantivist |
|----------------------------|---------------------------|--------------------------------------|
| Ontology | Atomist/individualist | Holist |
| Social Scientific Affinity | Functionalism | Conflict Theory |
| View of State Intervention | Hermeneutics of suspicion | Hermeneutics of charity |
| Economic Orientation | Capitalist/market | Social democracy |
| Eschatological Dimensions | Singularity | Peaceable kingdom of present species |

While these contrasts by no means exhaust the potential differences between instrumentalist and substantivist approaches, they do serve as an instructive encapsulation of the ways in which foundational assumptions, orientations, and goals can inform research in the field.

1. *Rival Ontologies in Cyberlaw*

The question of ontology is ultimately one of the “really real,” the ground of being.¹⁴⁴ In instrumentalist cyberlaw scholarship, technology itself is all too often taken as a foundational reality, which must be accommodated. From a more substantivist approach, law and policy can shape technology so that it better accommodates human ends. For example, the dominant approaches to high-frequency trading in stock markets have tended to assume that networks will continue to speed the pace of trading—or, at the very least, that the current pace of algorithmic finance will be maintained.¹⁴⁵ However, it is also possible to place law, policy, or government at the center of the picture, as the cause of acceleration, rather than simply the site of a belated response to it.¹⁴⁶

2. *Social Science in Cyberlaw*

As noted earlier, the economic foundations of Cyberlaw 1.0 deeply influenced the nature of work in that vein. But there was an even deeper social scientific orientation in this work: Mainstream economics is a largely functionalist affair.¹⁴⁷ Under functionalist social science approaches, the challenge for researchers is to assemble models of equilibrium and exchange that rationalize the existence and interrelationships of the main actors in a scenario. Rooted in organic metaphors (of, say, the society as a body, with each part performing a particular function, both supported by and supporting the whole), these functionalist approaches are biased toward elucidating harmonious or mutually supportive exchange. This Whiggish sensibility also informed the positive vision of cyberspace, or at least the Internet, as a fundamentally egalitarian and democratizing force.¹⁴⁸ For example, in Yochai Benkler’s *The Wealth of Networks*, technologies of interconnection were poised to deliver unprecedented

144. Kit Fine, *The Question of Ontology*, in *METAMETAPHYSICS: NEW ESSAYS ON THE FOUNDATIONS OF ONTOLOGY* (David Chalmers, et al., eds., 2009) 171 (framing the goal of ontology as “clarification of the concept of what is real”).

145. See generally Megan Woodward, *The Need for Speed: Regulatory Approaches to High Frequency Trading in the United States and the European Union*, 50 *VAND. J. TRANSNAT’L L.* 1359 (2017).

146. See generally Frank Pasquale, *Law’s Acceleration of Finance: Redefining the Problem of High-Frequency Trading*, 36 *CARDOZO L. REV.* 2085 (2015).

147. Frank Pasquale, *Access to Medicine in an Era of Fractal Inequality*, 19 *ANNALS OF HEALTH LAW* 269, 309 (2010).

148. See generally *id.* (explaining this biased view of the Internet).

access to movies, music, and all manner of intellectual endeavor, to individual users, disrupting content controlling oligopolies.¹⁴⁹

Another approach toward social science is more conflict oriented. The fundamental story here is not one of harmonious interaction but of struggle to control resources and recognition.¹⁵⁰ “Conflict theory” is a capacious, if awkward, category for such work. In cyberlaw, conflict-oriented approaches have focused on the role of large technology firms in dispossessing creators of intellectual property of potential royalties.¹⁵¹ Such firms are also in conflict with their own workers, given antitrust complaints against them as monopsonistic price fixers of certain forms of labor via anti-poaching agreements.¹⁵² These kinds of conflicts have become more pronounced in recent years, particularly given the weaponization of social media and search in various cultural and political struggles.¹⁵³ The most prominent current example in U.S. circles is the Russian government’s sponsorship of hackers to feed disinformation into social media to influence the outcome of the 2016 presidential election.

149. See YOCHAI BENKLER, *THE WEALTH OF NETWORKS: HOW SOCIAL PRODUCTION TRANSFORMS MARKETS AND FREEDOM* 68 (2006) (explaining peer production of information).

150. See generally Nancy Fraser, *From Redistribution to Recognition? Dilemmas of Justice in a “Post-Socialist” Age*, 212 *NEW LEFT REV.* (1995), <https://newleftreview.org/1/212/nancy-fraser-from-redistribution-to-recognition-dilemmas-of-justice-in-a-post-socialist-age> [https://perma.cc/3TF6-MBUX] (explaining the struggle of control and recognition).

151. See Peter Jakobsson & Fredrik Stiernstedt, *Pirates of Silicon Valley: State of Exception and Dispossession in Web 2.0*, *FIRST MONDAY* (2010), <http://firstmonday.org/ojs/index.php/fm/article/view/2799> [https://perma.cc/4CDN-VKBR] (explaining the issues with people’s dispossession of copyright and other intellectual property).

152. See generally Frank Pasquale, *Two Narratives of Platform Capitalism*, 35 *YALE L. & POL’Y REV.* 309 (2016) (reporting on Google/Apple “anti-poaching” antitrust case).

153. See generally SAFIYA UMOJA NOBLE, *ALGORITHMS OF OPPRESSION: HOW SEARCH ENGINES REINFORCE RACISM* (2018); Frank Pasquale, *The Automated Public Sphere*, in *THE POLITICS OF BIG DATA: BIG DATA, BIG BROTHER?* (Ann Rudinow Sætnan, Ingrid Schneider, & Nicola Green eds., 2018); Ramona Pringle, *In 2017, Tech Turned Dark*, *CBC NEWS* (Dec. 26, 2017, 5:00 AM), <http://www.cbc.ca/news/technology/tech-2017-negative-effects-fake-news-1.4463340> [https://perma.cc/8BLE-329K]; Tom Simonite, *2017 Was the Year We Fell Out of Love with Algorithms*, *WIRED* (Dec. 26, 2017, 9:00 AM), <https://www.wired.com/story/2017-was-the-year-we-fell-out-of-love-with-algorithms/> [https://perma.cc/3QWT-LN3T].

3. *Rival Views of State Intervention in Cyberlaw*

For dominant cyberlaw frameworks, law should only indirectly influence technological innovations by providing a legal framework for these developments to take place. Capitalist democracies accept that law enables private property regimes under the values of liberalism or in an attempt to promote wealth creation by protecting the interests of innovators.¹⁵⁴ Markets in turn are to determine whether technologies persist or become obsolete. This approach supports hermeneutics of suspicion in analyzing state intervention in digital technologies or digital markets. For example, widespread support of CDA § 230 immunities in the U.S., which insulate online intermediaries from legal liability in certain circumstances, reflects this kind of suspicion.¹⁵⁵

By contrast, a more substantivist approach is more open to state intervention. The right to be forgotten offers a good example of the types of divergent approaches that can occur here.¹⁵⁶ U.S. commentators have tended to be very critical, assuming that the types of negative liberty protected by the First Amendment exhaust the capacities and potential of free expression law. European policymakers have struck a more nuanced balance between speech rights and privacy rights in the area of purposeful obscurity of certain database entries.¹⁵⁷

4. *Economic Orientation: Capitalism Versus Social Democracy*

For the substantivist, the market, like technology, is always embedded in a social context and dependent on certain laws, which are themselves reciprocally embedded in a particular economic and technological context.¹⁵⁸ Forms of market exchange like capitalism are

154. See generally STONEMAN, *supra* note 86, at 306 (discussing the economics of innovation and technological diffusion and noting the need to link policy to theorizing on welfare optimality).

155. See generally Paul Ehrlich, *Communications Decency Act § 230*, 17 BERKELEY TECH. L.J. 401 (2002) (discussing political pressures that encouraged the immunization of intermediary liability).

156. See generally Emily Linn, *A Look into the Data Privacy Crystal Ball: A Survey of Possible Outcomes for the EU-U.S. Privacy Shield Agreement*, 50 VAND. J. TRANSNAT'L L. 1311 (2017).

157. See Frank Pasquale, *Reforming the Law of Reputation*, 47 LOY. U. CHI. L.J. 515, 516 (2015) (stating that reputation justice is served by a system where some data subjects can remove, or obscure, certain irrelevant information so as it does not dominate the impression of an aggrieved individual).

158. See Mark Granovetter, *Economic Action and Social Structure: The Problem of Embeddedness*, 91 AM. J. SOC. 481, 482 (1985).

even more specifically dependent upon certain relations of production.¹⁵⁹ Instrumentalists are more eager to achieve parsimony in their models of society and, therefore, do less to emphasize the particularity and context of situations.

For example, in cases of intermediary responsibility for online hate speech or enabling of intellectual property infringement, an instrumentalist is much more likely to find a particular and narrow set of costs to minimize (such as collateral censorship) and benefits to maximize (such as social inclusiveness and free expression). The key to instrumentalism is defining some small set of desiderata and adjusting law and policy to maximize them.¹⁶⁰ A more substantivist approach considers more closely the ways in which the Internet changes the nature of hate speech and intellectual property infringement.¹⁶¹ It sees the question of legal regulation as less of a binary (whether to extend or not extent extant patterns of law) and more of a context-dependent inquiry that may create the need for whole new kinds of approaches.

5. *Eschatological Dimensions: Singularity Versus Peaceable Kingdom*

Though instrumentalists tend to characterize their approach as pragmatic, core belief systems ultimately must take a position on futures near and far. Instrumentalism is, at its core, a wildly *open-ended* approach to human relations.¹⁶² Once goals are specified, a very wide array of means of reaching them is permitted. So, for instance, if the goal is to increase test scores of students, any instructional set up—from traditional classroom to iPad-prodded video lectures and games—is appropriate to the extent it raises the scores. If the goal is

159. See RICHARD MARSDEN, *THE NATURE OF CAPITAL: MARX AFTER FOUCAULT* 112 (1999).

160. See generally F. Gregory Hayden, *Instrumentalist Policymaking: Policy Criteria in a Transactional Context*, 29 J. ECON. ISSUES 361 (1995).

161. See generally DANIELLE KEATS CITRON, *HATE CRIMES IN CYBERSPACE* (2014) (engaging in an in-depth analysis of the nature of harassment online to ground a set of nuanced policy proposals). Lawyer-sociologists like Ifeoma Ajunwa and Ari Ezra Waldman are also leading this movement in the privacy area—not simply taking old goals of privacy into the digital realm, but exploring the new goals that must be part of online privacy policy and law given the ways in which the digital have changed information exchange. See generally Ari Ezra Waldman, *Designing Without Privacy*, 55 HOUS. L. REV. 659 (2018); Ifeoma Ajunwa, Kate Crawford, & Jason Schultz, *Limitless Worker Surveillance*, 105 CALIF. L. REV. 735 (2017).

162. See Robert S. Summers, *Pragmatic Instrumentalism in Twentieth Century American Legal Thought*, 66 CORNELL L. REV. 861, 863 (1981) (stating that instrumentalism, which is “devoid of intrinsic goods,” is open-ended).

to induce the mentally ill to increase the number of times they say they are feeling “good to well” in surveys, either talk therapy, a pill, or an app could be a means of reaching such a goal. From a more substantivist perspective, the process of education or mental health care is more clearly defined. Computers have a role in both settings, but the relationships are fundamentally defined by human-to-human interaction—a constitutive practice in these fields.¹⁶³

The instrumental viewpoint assumes that there is something beyond embodied relationships of human beings that can account for the *purpose* of institutions and relationships that are now almost entirely carried out by or enacted by humans. This abstraction feeds into the telos of “singularitarianism,” which both predicts and encourages the merger of person and machine into cyborg-ish hybrids, perhaps eventually evolving into pure machine.¹⁶⁴ We are by no means asserting that all instrumentalists are singularitarians—rather, we are simply noting that the mental framework of instrumentalism is more open to such evolution of humans and societies than a more substantivist approach.

Substantivists prioritize instead the maintenance of present institutions and relationships and their present organic substrates. The idea here is that there is not some completely optimized form of humanity or society that Ellulian technique is destined to bring about via some Darwinian process. Rather, part of our free will (both personally and at a collective level via democratic action) is to preserve a peaceable kingdom of more and less technologically advanced forms of life.¹⁶⁵

163. Frank Pasquale, *Professional Judgment in an Era of Artificial Intelligence and Machine Learning*, BOUNDARY2 (forthcoming, 2019), at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3067711 (“Professionals in two human services sectors—health care and education—have offered sustained and extensive (if often unsuccessful) resistance to this neoliberal ideology of substitutive automation. Each sector values certain practices, defining them as constitutive of the field, rather than as mere means to an end.”); Frank Pasquale, *A Rule of Persons, Not Machines: The Limits of Legal Automation*, GEO. WASH. L. REV. (forthcoming, 2019), at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3135549 (questioning how far automation can replace face to face interaction in legal services).

164. See generally YUVAL NOAH HARARI, *HOMO DEUS: A BRIEF HISTORY OF TOMORROW* (2017); RAY KURZWEIL, *THE AGE OF SPIRITUAL MACHINES: WHEN COMPUTERS EXCEED HUMAN INTELLIGENCE* (1999).

165. See, e.g., WILL KYMLICKA, *MULTICULTURAL CITIZENSHIP: A LIBERAL THEORY OF MINORITY RIGHTS 2* (1995) (taking into the realm of varied technology adoption, the type of concern for the preservation of diversity that is a common goal of multiculturalist political theory, and describing varied governmental programs to maintain the culture of minority groups).

B. Linking the Substantive Perspective with the Digital Persona Model

As mentioned in the Introduction, a digital persona is a concept used to describe how our legal rights, interests and obligations are increasingly interwoven with our real life interests. Just as we would hope to go about our business in the real world without undue harassment, we might expect that our online lives would be similarly unconstrained (harkening back to the late John Perry Barlow's perhaps overly utopic vision of cyberspace). This section links the substantive perspective on law and technology with the digital persona model and overviews a digital bill of rights for a digital persona.¹⁶⁶

A digital persona is, essentially, an avatar of a real person whose life is interwoven with the digital world (or "digital biosphere").¹⁶⁷ In many ways, the digital persona represents an advance in terms of social relationships as it can enable an individual to transcend or escape some of the constraints that affect the non-digital lives of individuals at a micro-level every day. Freed from these structural constraints, the digital persona can roam, explore, and evolve, *unless* the structural constraints of the non-digital impinge upon their digital environment. As the digital biosphere evolves, these structural constraints have become more prominent and contested. Different stakeholders with different goals, including large technology firms, government agencies, and even harmful individuals and groups, seek to track us as we roam, dictate how we roam and explore, what we see, even how we experience the online journey.

We use the term digital persona to set our model apart from narrower views of digital identity (while recognizing similar substantive technology perspectives have been advanced under the narrower views).¹⁶⁸ In privacy law, discussions of personal identity often surround notions of control over what third parties can know about an individual—hence, law normally seeks to regulate information collection practices. At least in this sense, identity is narrower than personhood, which is a construct to describe the whole self.

Personhood includes the notion that, ideally, an individual should be able to exercise free will and freedom of choice without

166. See *infra* Section IV.B (linking the substantive perspective with the digital persona model).

167. See generally Cockfield, *supra* note 53.

168. Our approach is, however, consistent with the tentative embrace of the "cyborg" metaphor in Jathan Sadowski & Frank Pasquale, *The Spectrum of Control: A Social Theory of the Smart City*, FIRST MONDAY (2015), <https://firstmonday.org/article/view/5903/4660> [<https://perma.cc/7F5C-V5TJ>].

undue manipulation (for instance, freedom from seeing a political effort disguised as an online news story). Under the older natural rights view, personhood includes the moral entitlement to “one’s one,” which necessarily includes freedom of expression, thought, belief, and conscience.¹⁶⁹ In other words, while the older views protected interests such as privacy, the digital persona model strives to proactively protect autonomy.¹⁷⁰

Not only does treatment by third parties shape one’s sense of self, but this treatment can have discriminatory or otherwise exclusionary substantive outcomes and provoke other political (e.g., antidemocratic) and social (e.g., being offered market choices based on racially biased algorithms) outcomes.

Consistent with the substantive technology perspectives discussed previously, Cathy O’Neil, for instance, argues that prediction algorithms are never truly neutral, but rather reflect our biases, prejudices and past experience.¹⁷¹ Timothy Wu discusses how these algorithms are often designed to maximize online engagement time, and track every keystroke to gather personal data that provides clues as to our needs and desires—to better manipulate us.¹⁷²

Under the substantivist perspective, the meshing of law and technology increasingly generates these substantive outcomes. That is, this meshing within the virtual world ultimately determines how individuals are treated in the real world. Hence, the digital persona model is in the end meant to advance individual autonomy by signaling the need for greater legal protection, particularly against unaccountable and unseen forces that seek to manipulate us. It alerts us to the fact that sometimes individual vulnerabilities are amplified within the digital biosphere. These individuals can be at risk in ways that are not apparent in the real world, including identity theft, illegal usage of personal data, blackmail through ransomware, and so on.

The model opens our eyes to conceiving of the need for a more holistic protection of self-directed online explorations. The model also helps to focus attention on the fact that a digital persona is largely constituted by two external forces: law and technology. Because we recognize both law and technology are infused with political, social,

169. Arthur J. Cockfield, *Income Taxes and Individual Liberty: A Lockean Perspective on Radical Consumption Tax Reform*, 46 S.D. L. REV. 8 (2001)(discussing Lockean natural rights theory).

170. See generally Cockfield, *supra* note 137 (discussing ways to promote autonomy in an environment of technology change).

171. See CATHY O’NEIL, *WEAPONS OF MATH DESTRUCTION: HOW BIG DATA INCREASES INEQUALITY AND THREATENS DEMOCRACY* 179-81 (2016).

172. See TIMOTHY WU, *ATTENTION MERCHANTS: THE EPIC SCRAMBLE TO GET INSIDE OUR HEADS* 276-78 (2016).

and cultural meaning, the framing does not limit discussion or downplay the complexity that remains at the intersection of law and technology. It simply acknowledges that how we are treated in the digital world increasingly has ramifications in the real world.

The digital persona model also follows ongoing technology trends whereby there is an ever-greater mental union between a person and his digital analog. Notably, we may be moving closer to Gibson's vision of cyberspace,¹⁷³ where our perceptions may be dominated by digital mediation. We may be getting glimpses of this mental meshing as users "jack into" virtual reality platforms wearing haptic suits that provide sensory feedback to events occurring within the online world, a place where many of us already spend too much time.¹⁷⁴ It raises the possibility that individuals will increasingly lead critical portions of their lives online, raising the risk of greater harm to an individual's autonomy from manipulation or even mere carelessness. The digital persona model hence suggests a greater need for constitutional, human rights, and other protections for the digital persona—perhaps even ultimately a digital bill of rights.

We note that, under our substantivist perspective, the digital persona model avoids Easterbrook's worry concerning too much focus on a particular technology, which he claimed was like studying the law of the horse.¹⁷⁵ Nor do we wish to affirm the cyberexceptionalism view that the digital persona requires entirely new law. Rather, the digital persona is a law and technology construct, reflecting an extension of an individual's existing legal interests. Accordingly, application of "traditional" law may suffice to protect what are after all traditional interests, whereas new forms of law may also be needed to counterbalance new threats to dignity and autonomy.

To achieve those aims, the following paragraphs outline a few components of a potential digital bill of rights.

Personal Data Rights: Users often trade their personal data for access to social media with little oversight and accountability surrounding the usage and disclosure of this data.¹⁷⁶ Large social network platforms like Facebook are tied into a web of data brokers who use sophisticated algorithms to micro-target these same users.¹⁷⁷ This environment seems to require strengthening privacy laws and policies based on fair information collection practice principles such as the European Union's new General Data Protection Regulation

173. See GIBSON, *supra* note 47, at 51.

174. See *supra* Section II.A.

175. See *supra* Section II.A.

176. See WU, *supra* note 172, at 323.

177. See *id.* at 299.

(GDPR) or Canada's Personal Information Protection and Electronic Documents Act. Data privacy rights need to be updated to provide users with greater perceived and actual control of their personal information. The GDPR for instance makes it clearer that third parties cannot access personal data unless a data subject opts in after receiving a request written in plain language, not legalese.

Data Transparency Rights: As a digital persona travels throughout the digital biosphere he or she needs full disclosure concerning ways that third parties seek to sway his or her views.¹⁷⁸ Online ads should contain a link to information such as who bought the ad, whether the ad is connected to a political party, how much was spent, and so on.

Algorithm Transparency Rights: Similarly, a digital persona needs assurances his or her paths are not loaded with hidden dangers. Governments and businesses are now deploying powerful algorithms, often supported by artificial intelligence software such as machine learning where only the initial parameters are set. These algorithms sift through billions of data points per day to try to discern and sometimes shape specific behavioral patterns, raising a host of ethical and social issues.¹⁷⁹ A system of rules is needed to mandate audits and review of these algorithms to guard against downsides.¹⁸⁰

Representative Taxation Rights: The digitization of the global economy lets large technology companies off the tax hook, mainly because intangible assets like brands, goodwill, patents, and copyright, are highly mobile and can be transferred to low- or zero-tax jurisdictions.¹⁸¹ Global rules need to be realigned with the challenges presented by this new economy to ensure fair taxation in governments where, for instance, large consumer markets enjoy taxing profits associated with these markets.

Digital Security Rights: A digital persona needs sufficient legal protection against outside hackers and others who are interested in illegal or improper access to personal data.

In summary, a digital bill of rights would recognize that an individual's digital persona is increasingly interwoven with real world

178. See *Universal Guidelines for Artificial Intelligence*, PUBLIC VOICE (Oct. 23, 2018), <https://thepublicvoice.org/ai-universal-guidelines/> [<https://perma.cc/VPH4-YLZC>].

179. See O'NEIL, *supra* note 171.

180. See *id.* (discussing a promising set of principles for reviewing algorithms).

181. See, e.g., Arthur J. Cockfield, *Balancing National Interests in the Taxation of Electronic Commerce Business Profits*, 74 TUL. L. REV. 133, 160 (1999). See generally ARTHUR COCKFIELD ET AL., *TAXING GLOBAL DIGITAL COMMERCE* (2013).

consequences and help to promote autonomy and dignity for a user's online experiences.

C. Cyberlaw Case Study: Free Expression Online in an Age of Bots

To understand the stakes of the contrast between instrumentalism and substantivism, it is helpful to review debates on the nature of robotic speech online. For instrumentalists like Eugene Volokh, bots are simply a way of extending existing speech rights by individuals.¹⁸² Reasoning from an example of an animatronic sculpture that speaks, Volokh argues that “[t]he government can’t restrict what the sculpture is programmed to say . . . because the artist is endowed with constitutional rights and the restriction would restrict the artist’s right to communicate (and the listeners’ right to hear).”¹⁸³ So he justifies expansive protections for information generated using computer algorithms. In an article refining and extending this instrumentalist perspective, Stuart Benjamin predicts that courts will expand the coverage of First Amendment protection to artificial intelligence (AI), including algorithmic data processing.¹⁸⁴

A substantivist approach is more skeptical of such reasoning, since a massive change in quantity and speed of expression also marks a shift in quality. As Tim Wu has observed, “[c]omputers make trillions of invisible decisions each day; the possibility that each decision could be protected speech should give us pause.”¹⁸⁵ He and other scholars have forcefully argued for limiting constitutional protection of “machine speech.”¹⁸⁶ These calls have renewed urgency in 2018, as the weaponization of cyberspace by state and non-state actors has become increasingly apparent. California has even required bot disclosure to ensure that persons are not deceived by AI online.¹⁸⁷

182. See Eugene Volokh, *Freedom of Speech and Information Produced Using Computer Algorithms*, VOLOKH CONSPIRACY (June 21, 2012), <http://volokh.com/2012/06/21/freedom-of-speech-and-information-produced-using-computer-algorithms/> [<https://perma.cc/4GQB-QS8H>].

183. *Id.*

184. See Stuart Minor Benjamin, *Algorithms and Speech*, 161 U. PA. L. REV. 1445, 1447 (2013). For an example of a free speech action involving artificial intelligence, see *Zhang v. Baidu.com, Inc.*, 932 F. Supp. 2d 561, 561 (S.D.N.Y. 2014).

185. Tim Wu, *Free Speech for Computers?*, N.Y. TIMES (June 19, 2012), <http://www.nytimes.com/2012/06/20/opinion/free-speech-for-computers.html> [<https://perma.cc/F4GA-RKG9>]; see also Morgan Weiland, *Expanding the Periphery and Threatening the Core: The Ascendant Libertarian Speech Tradition*, 69 STAN. L. REV. 1389, 1466-69 (2017).

186. Pasquale, *supra* note 82, at 490.

187. See David Gershgorin, *A California Law Now Means Chatbots Have to Disclose They're Not Human*, QUARTZ (Oct. 3, 2018), <https://qz.com/1409350/a-new->

Courts are divided on whether algorithmic generation of search results and newsfeeds merits full First Amendment protection.¹⁸⁸ The question of bot-generated speech has not yet received sustained judicial attention. However, it will become increasingly important. American voters still do not know to what extent foreign governments and non-state actors used bots to manipulate social media and search engines during the presidential election of 2016.¹⁸⁹ These entities are exceptionally important gatekeepers.¹⁹⁰ The Federal Election Commission shirked its duty to require disclosure of the source of much political advertising on Facebook and Twitter. Reports now suggest that the goal of the Russian buyers of many “ads was to amplify political discord in the U.S. and fuel an atmosphere of divisiveness and chaos.”¹⁹¹ Social media firms are cooperating with investigators now. But they will likely fight proactive regulation by arguing that their algorithmic feeds are speech. In fact, they have already deleted critical information.¹⁹²

Given the growing concern among political scientists about the extraordinary power of secret algorithmic manipulation to target influential messaging to persons with little to no appreciation of its ultimate source, a substantivist approach would warn courts against privileging algorithmic data processing as speech. As James Grimmelman has warned with respect to “robotic copyright,” First Amendment protection for the products of AI could systematically

law-means-californias-bots-have-to-disclose-theyre-not-human/
[<https://perma.cc/X2VU-M8EU>].

188. See, e.g., Oren Bracha, *The Folklore of Informationalism: The Case of Search Engine Speech*, 82 *FORDHAM L. REV.* 1629, 1631 n.8 (2014) (providing cases pertaining to First Amendment law as applied to search engines); see also Tim Wu, *Machine Speech*, 161 *U. PA. L. REV.* 1495, 1513 n.82 (2013) (listing cases about First Amendment applications to algorithmic output). See generally Ashutosh Avinash Bhagwat, *When Speech Is Not “Speech”*, *OHIO ST. L.J.* 839 (forthcoming) (providing a broader analysis of modern First Amendment-related issues).

189. See, e.g., Pasquale, *supra* note 153 (compiling examples of manipulation).

190. Frank Pasquale, *Dominant Search Engines: An Essential Cultural and Political Facility*, in *THE NEXT DIGITAL DECADE: ESSAYS ON THE FUTURE OF THE INTERNET* 401, 402 (2011).

191. Dylan Byers, *Facebook Gives Russian-linked Ads to Congress*, *CNN* (Oct. 1, 2017), <http://money.cnn.com/2017/10/01/media/facebook-russia-ads-congress/index.html> [<https://perma.cc/JR9F-7PQ3>].

192. See Kieren McCarthy, *Facebook, Twitter Slammed for Deleting Evidence of Russia’s US Election Mischief*, *REGISTER* (Oct. 13, 2017), https://www.theregister.co.uk/2017/10/13/facebook_and_twitter_slammed_for_deleting_evidence_of_russian_election_interference/ [<https://perma.cc/MM2Z-Z8JY>].

favor machine over human speech.¹⁹³ On only the thinnest of instrumentalist grounds is there a recognizable continuity between the two (as both potentially influencing or manipulating listeners or readers). A growing body of empirical research on the troubling effects of an “automated public sphere” suggests that bot-mediated communication is an entirely distinct phenomenon from previous modes of communication.¹⁹⁴ For example, massively invasive data profiles can make it easy to target communication toward those most susceptible to manipulation.¹⁹⁵

Our digital persona model leads to the same conclusion. The model focuses on the need to promote autonomy within online experiences.¹⁹⁶ Computers and networks increasingly shape forms of expression related to our digital persona. It is clear that algorithmic speech can interfere with autonomy by manipulating or distorting choices individuals may make.

To restore public confidence in democratic deliberation, legislators might require rapid disclosure of the data used to generate algorithmic speech, the algorithms employed, and the targeting of that speech. U.S. legislation akin to the GDPR’s Right to Explanation would not infringe on, but would rather support, First Amendment values. Affected firms may assert that their algorithms are too complex to disclose.¹⁹⁷ If so, governments should ban the targeting and arrangement of information at issue, because the speech protected in the Constitution must bear some recognizable relation to human cognition.

From a substantivist approach, courts should not strike down bans on subliminal advertising, or its modern-day equivalents, since such “communication” operates outside the sphere of cognition. They should similarly avoid intervening to protect “speech” premised on elaborate and secretive human subjects research on Internet users. Moreover, even if free expression protection extends to algorithmic

193. See James Grimmelmann, *Copyright for Literate Robots*, 101 IOWA L. REV. 657, 674 (2016).

194. See Frank Pasquale, *The Automated Public Sphere*, in *THE POLITICS AND POLICIES OF BIG DATA: BIG DATA, BIG BROTHER?* (Ann Rudinow Setnan, Ingrid Schneider, & Nicola Green eds., 2018); see also Frank Pasquale, *Bots United*, BALKINIZATION (Feb. 14, 2012), <https://balkin.blogspot.com/2012/02/campaign-2020-bots-united.html> [<https://perma.cc/VT5F-XYH4>].

195. See generally Ryan Calo, *Digital Market Manipulation*, 82 GEO. WASH. L. REV. 995 (2014).

196. See *id.* at 999.

197. See *id.* at 1004. On the need to limit the scope and power of such “inexplicable” artificial intelligence, see Frank Pasquale, *Toward a Fourth Law of Robotics: Preserving Attribution, Responsibility, and Explainability in an Algorithmic Society*, 78 OHIO ST. L.J. (forthcoming 2017).

targeting, disclosure rules are essential and constitutionally sound.¹⁹⁸ In short, context matters, and a substantivist perspective reveals the critical distinctions between different forms of speech.

CONCLUSION

Many scholarly perspectives promote understanding of how technology intersects with public policy and legal matters, but they also have blind spots. Traditional research areas that fall within this rubric include copyright, trademark, patent, telecommunications, and mass media law. More recent research efforts include cyberlaw and emerging efforts to more broadly examine the relationship between law and technology.¹⁹⁹

These areas are typically studied and evaluated as distinct legal topics so that law and technology analysis lacks overt coherence. To date, there are only nascent attempts to develop broader perspectives or theories that transcend this compartmentalization, and they tend to be dominated by instrumentalist approaches. A more balanced law and technology approach is needed to address recurring dilemmas where traditional approaches have been inadequate, such as the potential need for laws to ban, inhibit, or encourage new technology, and reducing uncertainty in the application of existing legal rules as applied to new practices. By complementing instrumentalist cyberlaw research with a more substantive approach, scholars are developing a richer dialogue on the role of law and technology in general. That richer dialogue should help inform policymakers so that they avoid possible over- or under-inclusiveness of existing legal rules as applied to new practices, and can help them to remedy the obsolescence of some existing rules.

A substantivist approach helps us to understand how law and technology analysis and prescriptions can reinforce or subvert existing structures. Though an instrumentalism informed by economics has dominated legal research in law and technology, the fields of philosophy of technology, science and technology studies, and social studies of science are now mature enough to support rival approaches grounded in a deep understanding of the nature of, rather than results of, technological change. These approaches are helpful in generating

198. See, e.g., *McConnell v. FEC*, 540 U.S. 93 (2003) (resulting in an 8-1 decision to uphold disclosure provisions of BCRA); see also Frank Pasquale, *Reclaiming Egalitarianism in the Political Theory of Campaign Finance Reform*, 2008 ILL. L. REV. 599, 652-53 (being cited in *Citizens United v. FEC*, 558 U.S. 310, 451 (2010) (Stevens, J., dissenting)).

199. See *infra* Part II.

insights into analytical principles or guidelines and enriching the field of law and technology.

A substantivist perspective supports what we call the digital persona model to signify the need for more holistic legal protection for autonomy within the online world (or digital biosphere) as an individual's life becomes more interwoven with technology. In particular, a real world individual needs legal and policy assurances that his or her online journey is not being unduly manipulated or distorted by businesses or governments that are too frequently unseen and unaccountable. To reduce this risk, governments should, *inter alia*, pass laws to regulate and audit algorithms to detect and eliminate problematic software code that inhibits autonomy.