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The Song Remains the Same: What Cyberlaw Might Teach the Next Internet Economy

Kevin Werbach

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THE SONG REMAINS THE SAME: WHAT CYBERLAW MIGHT TEACH THE NEXT INTERNET ECONOMY

*Kevin Werbach**

Abstract

The next stage of the digital economy will involve trillions of networked devices across every industry and sphere of human activity: The Internet of the World. Early manifestations of this evolution through on-demand services such as Uber and Airbnb raise a host of serious legal questions. The stage seems set for a decisive battle between regulation and innovation. Yet this perception is mistaken. In the end, the emerging businesses will welcome government engagement, and regulatory actors will accept creative solutions to achieve their goals. Why expect such a resolution? Because the same story played out twenty years ago, in the early days of the commercial internet.

Contemporary debates recapitulate a familiar error: the artificial division of virtual and real-space activity. Now, as in the past, this “digital dichotomy” feeds both excessive skepticism about legal protections and excessive concern about the threats from technology-based innovations. The history of cyberlaw shows the importance of overcoming such perceptions and recognizing the potential of government as an enabler of innovation.

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* Associate Professor of Legal Studies and Business Ethics, The Wharton School, University of Pennsylvania. Email: werbach@wharton.upenn.edu. Thanks to Dan Hunter, Sarah Light, Ellen Goodman, Ben Edelman, and attendees at the Lastowka Cyberlaw Colloquium and the TPRC conference for feedback on earlier drafts, and to Andrew Schlossberg for research assistance.

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INTRODUCTION

Over the past two decades, the internet's¹ sphere of influence has grown from a few million personal computers using dial-up modems to billions of smartphones and broadband connections around the globe.² It is hard to imagine the internet becoming any more significant, even as that significance grows. The next stage of the digital ecosystem will involve trillions of networked devices, across every industry and sphere of human activity: The Internet of the World. Early manifestations of this evolution raise serious legal questions about regulatory classification, taxation, consumer protection, and a variety of other controversies.³ The

1. Although many style guides still capitalize the word "internet," there is an ongoing debate as to whether the term should be considered a proper noun. See Adam Nathaniel Peck, *Stop Capitalizing the Word Internet*, NEW REPUBLIC (July 28, 2015), <https://newrepublic.com/article/122384/stop-capitalizing-word-internet>. In fact, the continued capitalization illustrates one of the themes of this Article: the perception of the internet as a new and exotic technology long after it became mainstream.

2. See *Internet Users*, INTERNET LIVE STATS, <http://www.internetlivestats.com/internet-users/#trend> (last visited Feb. 27, 2017) (showing global internet users growing from approximately 25 million in 1994 to 3 billion in 2014).

3. See Rashmi Dyal-Chand, *Regulating Sharing: The Sharing Economy as an Alternative Capitalist System*, 90 TUL. L. REV. 241, 245 (2015) (discussing regulatory issues in the sharing economy); Vanessa Katz, *Regulating the Sharing Economy*, 30 BERKELEY TECH. L.J. 1067, 1068–

stage seems set for a decisive battle between regulation and innovation.⁴ Yet this perception is mistaken. In the end, emerging businesses will welcome government engagement, and regulatory actors will accept creative solutions to achieve their goals. Why expect such a resolution? Because the same story played out twenty years ago, in the early days of the commercial internet.

Three of today's most-heralded technology trends—the On-Demand (or Sharing) Economy, the Internet of Things, and Big Data—are actually components of the same phenomenon. The digital economy is increasingly incorporating systems, business processes, and objects into its chaotic dynamism. Predictably, those involved claim that everything is different now and that rules impeding their efforts are vestiges of ignorance best ignored. Their customers, competitors, and erstwhile regulators are not so sure. Debates increasingly rage over whether rules designed for legacy industries should control novel services such as Uber and Airbnb.

Both sides exaggerate the dangers. Progress requires recognizing that government is as much the solution as it is the problem, perhaps more so. Legal regimes exist to protect certain values. If those regimes fail, the answer is not to abandon the values; it is to adapt the legal institutions or develop new regimes more reliant on market forces, norms, or technology. Regulation can evolve, but only once regulators and regulated engage with one another in good faith. The longer the pattern of oversteer persists, the greater the cost to innovation, on one side, or societal values, on the other. If anything, the innovators stand to lose the most by delaying government involvement in adopting reasonable solutions. Leading on-demand providers are already beginning to recognize this.

69 (2015) (discussing solutions to problems with regulation in the sharing economy); Stephen R. Miller, *First Principles for Regulating the Sharing Economy*, 53 HARV. J. ON LEGIS. 147, 149 (2016) (discussing local government regulation of sharing economies); Abbey Stemler, *Betwixt and Between: Regulating the Shared Economy*, 43 FORDHAM URB. L.J. 31, 33 (2016) (discussing how the sharing economy “does not fit within existing legal frameworks”); Molly Cohen & Corey Zehngbot, *What's Old Becomes New: Regulating the Sharing Economy*, BOS. B.J. (Apr. 1, 2014), <https://bostonbarjournal.com/2014/04/01/whats-old-becomes-new-regulating-the-sharing-economy/> (discussing legal issues raised by the sharing economy). See generally Benjamin G. Edelman & Damien Geradin, *Efficiencies and Regulatory Shortcuts: How Should We Regulate Companies Like Airbnb and Uber?*, 19 STAN. TECH. L. REV. 293 (2016) (discussing regulatory frameworks associated with Airbnb and Uber).

4. See, e.g., Sofia Ranchordás, *Does Sharing Mean Caring? Regulating Innovation in the Sharing Economy*, 16 MINN. J.L. SCI. & TECH. 413, 440–55 (2015) (advocating a new “innovation law” approach to on-demand services).

The pattern is easy to spot in hindsight but difficult to recognize in the moment.⁵ Fortunately, history can serve as a guide. Retracing similar controversies and showing their parallels to current disputes can illuminate the pathway forward. It can also remind us of important theoretical perspectives that bear on current debates. The early years of internet commercialization were fertile ones not only for business entrepreneurs but also for intellectual entrepreneurs in the legal academy.

In a seminal late-1990s exchange with Judge Frank Easterbrook, Professor Lawrence Lessig argued that the nascent field of cyberlaw could help identify both policy challenges and their solutions.⁶ The same measures used to evaluate how technologies regulate, he asserted, could be used to assess conventional legal mechanisms, guiding the selection of the best approach in specific contexts.⁷ Lessig's insight applies equally well to the Internet of the World. Questions about regulating (or not regulating) today's innovative companies and business models parallel debates about online activity twenty years ago. What is needed are yardsticks to evaluate where government action should stop and private regulation by software algorithms begin, and vice versa. Lessig's proposed criteria prove surprisingly durable, despite the massive changes in the digital world.

This Article traces the road to balance on the major public policy debates that began at the dawn of cyberlaw, roughly twenty years ago. It demonstrates how the fundamental issues then are in fact the fundamental issues now; only the players have changed. And it identifies how the lessons of history—even recent history—can help overcome current challenges. It proceeds as follows.⁸ Part I summarizes the emerging trends shaping the next stage of the internet ecosystem, in particular the spectacular growth of on-demand services such as Uber, Lyft, and Airbnb. Part II recounts the birth of cyberlaw in the 1990s and explains the structure of debates over the proper legal response to online services

5. The neo-Schumpeterian technology scholar Carlota Perez makes a similar argument with a much broader scope, describing fifty-year cycles of economic, political, financial, and social responses to major technological upheavals. See generally CARLOTA PEREZ, TECHNOLOGICAL REVOLUTIONS AND FINANCIAL CAPITAL (2003) (describing a pattern of boom, bust, and renewal across five technological revolutions). Central to Perez's framework is a "turning point," where the excesses of early exuberance are reined in with the help of regulation. See *id.* at 114–26.

6. Compare Lawrence Lessig, *The Law of the Horse: What Cyberlaw Might Teach*, 113 HARV. L. REV. 501, 501–02 (1999) (arguing that cyberlaw offers unique and valuable perspectives), with Frank H. Easterbrook, *Cyberspace and the Law of the Horse*, 1996 U. CHI. LEGAL F. 207, 208 (arguing that "we do not know whether many features of existing law are optimal").

7. See Lessig, *supra* note 6, at 502–03.

8. The author begs the reader's indulgence for naming the Article after a Led Zeppelin album, while employing Beatles songs for the section headings.

and e-commerce. Part III traces contemporary developments in four key policy areas: regulatory classification, competition policy, taxation or fees, and platform responsibility. Part IV draws out lessons for moving toward healthy solutions for today's policy challenges.

I. COME TOGETHER: THE INTERNET OF THE WORLD

The next stage of the digital economy does not yet have a widely accepted name, but its outlines are well established. It is the transformation of every form of economic activity along the same lines as the internet. This phenomenon appears at the intersection of three highly visible trends: the On-Demand Economy, the Internet of Things, and Big Data. Each represents huge innovation potential and vast market opportunities. Together they signify a global sea-change that will penetrate every sector of the economy. Just as electronic commerce, online communications, and digital content distribution transformed markets beginning in the late 1990s, broadband and social networks in the early 2000s, and mobile services in the late 2000s, the Internet of the World will disrupt existing industries and create new ones. It will also pose dramatic challenges for both business and the law.

A. *Revolution on Demand*

Providers in the On-Demand Economy use the internet to liberate and aggregate spare capacity, through new platforms that respond to demand in real time.⁹ For example, Turo (formerly RelayRides) lets people rent out their cars, giving the owners some extra cash and renters access to a wider range of rentals and pickup locations than car-rental fleets.¹⁰ Instacart delivers groceries from local supermarkets through a network of part-time and independent workers.¹¹ Prosper enables peer-to-peer (P2P)

9. See RACHEL BOTSMAN & ROO ROGERS, *WHAT'S MINE IS YOURS* xvi (2010); ROBIN CHASE, *PEERS INC* 2 (2015); Russell Belk, *You Are What You Can Access: Sharing and Collaborative Consumption Online*, 67 J. BUS. RES. 1595, 1595 (2014); Raj Kapoor, *Lessons from the Sharing Economy*, TECHCRUNCH (Aug. 30, 2014), <http://techcrunch.com/2014/08/30/critical-lessons-from-the-sharing-economy>; *The Rise of the Sharing Economy*, ECONOMIST (Mar. 9, 2013), <http://www.economist.com/news/leaders/21573104-internet-everything-hire-rise-sharing-economy>. A related development, most notable in China, is the growth of offline-to-online (O2O) services. See Juro Osawa, *Startups That Merge Online and Offline Services Are Sweeping China*, WALL ST. J. (Apr. 4, 2014, 6:00 AM), <http://blogs.wsj.com/digits/2014/04/04/online-services-go-offline-in-china>.

10. Alex Konrad, *With \$47 Million and a New Name, Car-Sharing Startup RelayRides Seeks Rebirth*, FORBES (Nov. 4, 2015, 1:10 PM), <http://www.forbes.com/sites/alexkonrad/2015/11/04/with-47-million-and-a-new-name-car-sharing-startup-relayrides-seeks-rebirth/>.

11. Brad Stone, *Instacart Reclassifies Part of Its Workforce amid Regulatory Pressure on Uber*, BLOOMBERG (June 22, 2015, 3:00 AM), <http://www.bloomberg.com/news/articles/2015-06-22/instacart-reclassifies-part-of-its-workforce-amid-regulatory-pressure-on-uber>. Instacart

lending without going through a traditional financial institution.¹² And the most prominent examples, Uber and Airbnb, offer immediate access to local transportation and short-term lodging in cities around the world.¹³ These companies generally do not own the assets to which they offer access. Instead, they create virtual marketplaces using the internet and mobile devices.¹⁴

The trend is often labeled the Sharing Economy or Collaborative Consumption,¹⁵ but these are misnomers. The sector's significant businesses are aggregate marketplaces of atomic services; little altruistic sharing occurs.¹⁶ Uber drivers, for example, don't just happen to be in the

originally used only independent contractors, but it recently reclassified some of them as employees. *Id.*

12. See Michael J. de la Merced, *Prosper Marketplace Raises \$165 Million in Latest Funding Round*, N.Y. TIMES (Apr. 8, 2015), <http://www.nytimes.com/2015/04/09/business/dealbook/prosper-marketplace-raises-165-million-in-latest-funding-round.html>.

13. See AIRBNB, <https://www.airbnb.com> (last visited Mar. 22, 2017); UBER, <http://www.uber.com> (last visited Mar. 22, 2017).

14. See *The Rise of the Sharing Economy*, *supra* note 9; cf. CHASE, *supra* note 9, at 3.

15. See BOTSMAN & ROGERS, *supra* note 9, at xv; Belk, *supra* note 9, at 1595; *The Rise of the Sharing Economy*, *supra* note 9.

16. See Andrew Leonard, "Sharing Economy" Shams: Deception at the Core of the Internet's Hottest Businesses, SALON (Mar. 14, 2014, 7:43 AM), http://www.salon.com/2014/03/14/sharing_economy_shams_deception_at_the_core_of_the_internets_hottest_businesses/; Christopher Mims, *How Everyone Gets the "Sharing" Economy Wrong*, WALL ST. J. (May 24, 2015, 3:32 PM), <http://www.wsj.com/articles/how-everyone-gets-the-sharing-economy-wrong-14-32495921>; Natasha Singer, *Twisting Words to Make 'Sharing' Apps Seem Selfless*, N.Y. TIMES (Aug. 8, 2015), <http://www.nytimes.com/2015/08/09/technology/twisting-words-to-make-sharing-apps-seem-selfless.html>; Brad Tuttle, *Can We Stop Pretending the Sharing Economy Is All About Sharing?*, TIME (June 30, 2014), <http://time.com/money/2933937/sharing-economy-airbnb-uber-monkey-parking/>.

"On-Demand Economy" is one of the other terms growing in prominence to better describe the phenomenon. See Jeff John Roberts, *As "Sharing Economy" Fades, These 2 Phrases Are Likely to Replace It*, FORTUNE (July 29, 2015, 8:20 AM), <http://fortune.com/2015/07/29/sharing-economy-chart/>. From a user's perspective, the key innovation of Uber, Airbnb, and similar services is that they make resources available instantaneously via mobile connections.

The true Sharing Economy is a real phenomenon. Non-profits, socially-oriented companies, and governments promote digital systems that make it easier to share both goods and services. See BOTSMAN & ROGERS, *supra* note 9, at xv; CHASE, *supra* note 9, at 2. However, these activities are naturally smaller-scale than the corporate on-demand platforms that are ultimately dedicated to maximizing revenues and profits. Real sharing requires thicker personal relationships, which are harder to divorce from local geographies and personal interaction. See Yochai Benkler, *Sharing Nicely: On Sharable Goods and the Emergence of Sharing as a Modality of Economic Production*, 114 YALE L.J. 273, 275–76 (2004). The growing prominence of on-demand companies that are not truly about sharing has also provoked objections from organizations more committed to the pro-social benefits of shared consumption. See Nancy Cook, *In Search of the Anti-Uber*, ATLANTIC (Aug. 1, 2015), <http://www.theatlantic.com/business/archive/2015/08/uber-sharing-economy-roots/400187>.

neighborhood with empty seats in their cars.¹⁷ The distinctive feature of Uber is that anyone with a car can become a driver-for-hire on demand, and anyone seeking a ride can get one on demand.

On-demand providers replicate the immediacy and rapid scalability of e-commerce services such as Netflix or Amazon. Enterprises have done similar things for many years within their sphere of control, through enterprise resource planning and supply chain management software systems. The innovation is that on-demand services are not limited to assets they own or control. Instead of shipping some bits over a wire or putting a box from a warehouse on a truck, these services can direct otherwise-independent people and objects.

Using software and networks to manage physical assets, digital systems can tokenize and manipulate real-world resources. The software representation of the asset effectively becomes the asset. Noted venture capitalist Marc Andreessen calls this phenomenon “software . . . eating the world.”¹⁸ Early Facebook executive Matt Cohler, also now a venture capitalist, refers to it as “remote controls for real life.”¹⁹ Touch a computer-generated map on your smartphone, and in a few minutes, a real car (with a real driver) appears in front of you in the real world.

So, companies such as Uber and Airbnb may be examples of another oft-discussed technology megatrend: the Internet of Things.²⁰ The Internet of Things, or IoT, involves network connectivity for devices other than personal computers, phones, and tablets.²¹ Most IoT

17. Unless otherwise noted, this Article focuses on the UberX service, which is the source of the bulk of Uber’s revenue and activity. Uber has begun offering a carpooling service, UberPool, which offers shared rides. However, it still uses drivers who, as with traditional taxis, are specifically looking to pick up riders for a fee. See Alex, *Announcing UberPool*, UBER NEWSROOM (Aug. 5, 2014), <https://newsroom.uber.com/announcing-uberpool/>.

18. Marc Andreessen, *Why Software Is Eating the World*, WALL ST. J. (Aug. 20, 2011), <http://www.wsj.com/articles/SB10001424053111903480904576512250915629460>.

19. Matt Cohler, *Great Mobile Apps Are Remote Controls for Real Life*, TECHCRUNCH (Sept. 21, 2012), <http://techcrunch.com/2012/09/21/great-mobile-apps-are-remote-controls-for-real-life/>.

20. Others have made this connection, notably tech publisher and conference organizer Tim O’Reilly. See Quentin Hardy, *Tim O’Reilly Explains the Internet of Things*, N.Y. TIMES (Feb. 4, 2015, 7:00 AM), <http://bits.blogs.nytimes.com/2015/02/04/tim-oreilly-explains-the-internet-of-things/> (listing Uber as an example of an Internet of Things company).

21. See DAVE EVANS, THE INTERNET OF THINGS: HOW THE NEXT EVOLUTION OF THE INTERNET IS CHANGING EVERYTHING 2, 4 (2011), http://www.cisco.com/web/about/ac79/docs/innov/IoT_IBSG_041FINAL.pdf; William H. Dutton, The Internet of Things 4 (June 20, 2013) (unpublished manuscript), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2324902; Neil Gershenfeld & JP Vasseur, *As Objects Go Online: The Promise (and Pitfalls) of the Internet of Things*, FOREIGN AFFAIRS (Mar./Apr. 2014), <http://www.foreignaffairs.com/articles/140745/neil-gershenfeld-and-jp-vasseur/as-objects-go-online>; Charles McLellan, *M2M and the Internet of Things: A Guide*, ZDNET (Jan. 10, 2013, 9:27 PM), <http://www.zdnet.com/article/m2m-and-the-internet-of-things-a-guide>.

discussions focus on small “things” such as sensors, environmental monitors, wearables, and medical devices, or on making large industrial systems such as supply chains and power grids “smart.”²² But the core idea is more than this. IoT means turning anything not traditionally a computing device into a network-aware source of data collection or manipulation.²³ That aggregates individual devices into networked systems, which in turn can shape their actions.²⁴ As with the On-Demand Economy, this process is experiencing phenomenal growth rates. Cisco predicts that by 2020, there will be 50 billion non-computing devices connected to the internet, many times the number of PCs and smartphones.²⁵

In the case of Uber and Airbnb, the “things” being manipulated are cars and lodgings. They are not directly connected as with networked sensors; a smartphone or tablet serves as the interface that links the physical asset into the network, with a human in-between. From the user’s standpoint, however, this distinction is immaterial, and the companies hope to eliminate that inefficiency before long. Uber has partnered with Carnegie Mellon University to develop self-driving cars, a technology other companies such as Google and Tesla are also actively pursuing.²⁶

The final element undergirding both the On-Demand Economy and the Internet of Things is Big Data.²⁷ There are two components to the Big Data revolution.²⁸ The first is the assembly of massive data sets of

22. See, e.g., Scott R. Peppet, *Regulating the Internet of Things: First Steps Toward Managing Discrimination, Privacy, Security, and Consent*, 93 TEX. L. REV. 85, 98 (2014) (overviewing types of Internet of Things devices, including “health and fitness sensors, automobile black boxes, home monitors and smart grid sensors, devices designed specifically for employee monitoring, and software applications that make use of the sensors within today’s smartphones”).

23. Dutton, *supra* note 21, at 4.

24. *Id.* at 9–10.

25. See EVANS, *supra* note 21.

26. Jack Stewart, *Tesla’s Self-Driving Car Plan Seems Insane, but It Just Might Work*, WIRED (Oct. 24, 2016, 7:00 AM), <https://www.wired.com/2016/10/teslas-self-driving-car-plan-seems-insane-just-might-work/>; Rolfe Winkler & Douglas MacMillan, *Uber Chases Google in Self-Driving Cars with Carnegie Mellon Deal*, WALL ST. J. (Feb. 2, 2015, 10:23 PM), <http://blogs.wsj.com/digits/2015/02/02/uber-chases-google-in-self-driving-cars/>.

27. Gil Allouche, *Big Data and the Internet of Things: A Powerful Combination*, SMARTDATA COLLECTIVE (June 4, 2014), <http://smartdatacollective.com/gilallouche/202371/big-data-and-internet-things-powerful-combination>.

28. See VIKTOR MAYER-SCHÖNBERGER & KENNETH CUKIER, *BIG DATA* 19 (2013); see also Steve Lohr, *The Age of Big Data*, N.Y. TIMES (Feb. 11, 2012), http://www.nytimes.com/2012/02/12/sunday-review/big-datas-impact-in-the-world.html?_r=0 (introducing the concept of Big Data as “[a] meme and a marketing term, for sure, but also shorthand for advancing trends in technology that open the door to a new approach to understanding the world and making decisions”).

information about people and the world, thanks to the steady acceleration of digitization through the eras of mainframes, personal computers, mobile devices, and sensors.²⁹ A key foundation for this activity is the emergence of cloud computing and networked data centers that can process vast amounts of data within the network.³⁰ The second is the emergence of software, storage, and standards able to distill and analyze those data sets as a whole.³¹ The “big” in Big Data signifies that instead of the statistician’s traditional sample sets, entire data sets can be run through computer-driven algorithms, generating predictive models that find patterns in networks of correlations.³²

The use of Big Data is important because the massive number of distributed connections embodied in the Internet of Things, tied to important societal systems through the On-Demand Economy, generates enormous amounts of data.³³ Tracking a fleet of cars in a city in real time and anticipating changes in demand and supply to deliver a car to any location on demand in a few minutes is a phenomenally difficult challenge. Uber could not manage it without powerful real-time data analytics. The more physical location is involved, and the more telemetry and behavioral data are incorporated along with it, the greater the technical challenge but also the more powerful the services that can be delivered.

Companies taking advantage of the three interconnected trends are experiencing unbelievable growth.³⁴ Roughly five years after it launched, Uber is the world’s most valuable private company, raising its latest funding round at a valuation of \$62 billion.³⁵ It now operates in over 300 cities worldwide and has over one million drivers in its network.³⁶ Its revenues are already in the billions of dollars and may hit \$12.5 billion in

29. MAYER-SCHÖNBERGER & CUKIER, *supra* note 28, at 19.

30. *See id.* at 30.

31. *Id.* at 19.

32. *See id.* at 31.

33. *See* Allouche, *supra* note 27; Hardy, *supra* note 20.

34. *See* Tomio Geron, *Airbnb and the Unstoppable Rise of the Share Economy*, FORBES (Jan. 23, 2013, 7:00 AM), <http://www.forbes.com/sites/tomiogeron/2013/01/23/airbnb-and-the-unstoppable-rise-of-the-share-economy/>; *The Sharing Economy: How Will It Disrupt Your Business?*, PRICEWATERHOUSECOOPERS (Aug. 2014), http://pwc.blogs.com/files/sharing-economy-final_0814.pptx (predicting that five key Sharing Economy sectors could grow from \$15 billion today to over \$300 billion in revenues by 2025).

35. *See* Mike Isaac and Leslie Picker, *Uber Valuation Put at \$62.5 Billion After a New Investment Round*, N.Y. TIMES: DEALBOOK BLOG (Dec. 3, 2015), <https://www.nytimes.com/2015/12/04/business/dealbook/uber-nears-investment-at-a-62-5-billion-valuation.html>.

36. *See* Luz Lazo, *Uber Turns 5, Reaches 1 Million Drivers and 300 Cities Worldwide. Now What?*, WASH. POST (June 4, 2015), <https://www.washingtonpost.com/news/dr-gridlock/wp/2015/06/04/uber-turns-5-reaches-1-million-drivers-and-300-cities-worldwide-now-what/>.

2017.³⁷ Airbnb is not far behind. Its valuation in its latest funding round exceeds \$25 billion,³⁸ and it has grown to over one million rooms worldwide, which is more than traditional hotel chains such as Marriott and Hilton provide.³⁹ There are also several substantial ride-hailing⁴⁰ competitors to Uber, including Lyft in the United States and Didi Chuxing in China, which are also valued in the billions of dollars.⁴¹

These providers are changing the way millions of people around the world find transportation and lodging. Some no longer own cars or stay in traditional hotels. And similar techniques are appearing in industry after industry. The brand council Crowd Companies tracks over 500 funded companies in what it terms the Collaborative Economy.⁴² They operate in fields including financial services, communications, business services, pre-owned goods, and logistics.⁴³

The potential scale of on-demand services is much greater than the legacy industries they challenge. In January 2015, Uber's ride-hailing service was generating revenue in San Francisco at a \$500 million annual run-rate, more than three times the size of the entire taxi industry in the city.⁴⁴ By changing the nature of the marketplace, on-demand services

37. See *Here's What a 2017 Uber IPO Could Look Like*, MAHESH VC (Nov. 14, 2016), <http://www.mahesh-vc.com/blog/heres-what-a-2017-uber-ipo-could-look-like>. As a private company, Uber does not report detailed financial information. *Id.* These numbers are based on selective information the company has disclosed in the past, plus leaked investor presentation materials. *Id.*

38. See Sara Ashley O'Brien, "Crazy Money"—Airbnb Valued at over \$25 Billion, CNNMONEY (June 27, 2015, 6:59 PM), <http://money.cnn.com/2015/06/27/technology/airbnb-funding-valuation-update/>.

39. See Julie Weed, *Airbnb Grows to a Million Rooms, and Hotel Rivals Are Quiet, for Now*, N.Y. TIMES (May 11, 2015), <http://www.nytimes.com/2015/05/12/business/airbnb-grows-to-a-million-rooms-and-hotel-rivals-are-quiet-for-now.html>.

40. Just as labeling on-demand services as sharing is a misnomer, the common designation of Uber and Lyft as "ridesharing" is less accurate than "ride-hailing." See Caitlin Huston, *Drivers with Uber, Lyft and Rival Ride-Hailing Services Are Mostly 51 or Older*, MARKETWATCH (Jan. 19, 2017, 7:20 AM), <http://www.marketwatch.com/story/study-most-ride-hailing-drivers-are-51-or-older-2017-01-18>.

41. See Benjamin Snyder, *This Ride-Sharing App Is Crushing Uber in China*, FORTUNE (June 26, 2015, 2:39 PM), <http://fortune.com/2015/06/26/china-uber-didi-kuaidi/>; Brian Solomon, *Lyft: We're Closing in on Uber with a 'Path to Profitability'*, FORBES (May 12, 2016, 10:00 AM), <http://www.forbes.com/sites/briansolomon/2016/05/12/lyft-were-closing-in-on-uber-with-path-to-profitability/#b90513e464ec>.

42. See *Collaborative Economy Honeycomb 2—Watch It Grow*, CROWD COMPANIES, <http://crowdcompanies.com/blog/collaborative-economy-honeycomb-2-watch-it-grow/> (last visited Mar. 15, 2017).

43. *Id.*

44. See Henry Blodget, *Uber CEO Reveals Mind-Boggling New Statistic That Skeptics Will Hate*, BUS. INSIDER (Jan. 19, 2015), <http://www.businessinsider.com/uber-revenue-san-francisco-2015-1>.

create new demand. And the impacts are not limited to the customer side. Millions of people around the world are becoming providers through these platforms, experiencing a new form of on-demand work. A February 2016 survey in the United Kingdom found that twenty-one percent of respondents (projecting to nine million people in the United Kingdom) had looked for work through on-demand platforms in the past year.⁴⁵

To understand the impact that on-demand services can have on business and public policy, it is important to view these services as a subset of a larger trend, which sweeps in other kinds of companies as well. Uber's enormous valuation, for example, reflected investors' belief that it would leverage its data and software-controlled network of cars to monetize services other than ride-hailing, which it is attempting through local delivery.⁴⁶ Similarly, IoT companies such as Google subsidiary Nest, which makes connected thermostats and smoke detectors,⁴⁷ and Fitbit, which makes connected exercise monitoring bracelets,⁴⁸ are most significant because of the potential applications of the data they collect and their ability to direct actions in the physical world.

When a refrigerator can re-order groceries falling into short supply, or a GPS route planner can avoid congested areas while directing a driver across town, the lines between sharing, on-demand, data analytics, and connected devices blur. At some level, virtually any resource that can be disaggregated or modularized is a candidate for on-demand sharing, and

45. See URSULA HUWS & SIMON JOYCE, UNIV. OF HERTFORDSHIRE, CROWD WORKING SURVEY: SIZE OF THE UK'S "GIG ECONOMY" REVEALED FOR THE FIRST TIME 1 (2016), <http://www.feps-europe.eu/assets/a82bcd12-fb97-43a6-9346-24242695a183/crowd-working-survey.pdf>.

Using a different methodology, a study released in March 2016 by J.P. Morgan Chase concluded that 4.2% of American adults had earned income from the "online platform economy" over a three-year period. JPMORGAN CHASE & CO. INST., PAYCHECKS, PAYDAYS, AND THE ONLINE PLATFORM ECONOMY 8 (2016), <https://www.jpmorganchase.com/corporate/institute/document/jpmc-institute-volatility-2-report.pdf>. While this is significantly smaller than the UK estimate, it still represents approximately 10 million people. *Id.* And the J.P. Morgan Chase study found the number of participants in the online platform economy increased tenfold from the beginning of the period in 2012 to its end in 2015. *Id.*

46. See Maya Kosoff, *Here's the Only Way Uber Can Justify Its \$41 Billion Valuation*, BUS. INSIDER (July 11, 2015, 8:02 AM), <http://www.businessinsider.com/the-only-way-uber-can-justify-a-41-billion-valuation-is-delivery-and-logistics-2015-7> ("The only way Uber can prove a valuation as massive as \$40 or \$50 billion is by expanding into delivery and logistics, allowing its fleet of drivers to move goods in addition to people."). There is no guarantee Uber will succeed. Even if it does not, networked ride-hailing services will continue to seek ways to take advantage of their informational and software assets to expand their footprint.

47. See Rolfe Winkler & Daisuke Wakabayashi, *Google to Buy Nest Labs for \$3.2 Billion*, WALL ST. J., <http://www.wsj.com/articles/SB10001424052702303595404579318952802236612> (last updated Jan. 13, 2014, 6:46 PM).

48. FITBIT, <http://www.fitbit.com> (last visited Mar. 15, 2017).

virtually any physical asset is a candidate to function as both sensor and actuator for cloud-based software-driven systems.⁴⁹

Services such as Uber, Lyft, and Airbnb are on the leading edge of something much bigger. They took root first and represent important developments in their own right. This Article highlights how they have already kindled significant legal and regulatory controversies. However, just as Amazon was far more than a disruptive entrant in the bookstore market, today's on-demand services offer only a taste of what is to come.

B. *The Next Wave for Business . . . and for Law*

The confluence of On-Demand, Internet of Things, and Big Data is producing shockwaves that will ripple through the global economy, in the same way that electronic commerce, digital content, social networks, and online services did in prior stages of internet development. Today, even though only a small minority of retail commerce and advertising occurs online in the United States,⁵⁰ few would disagree those sectors have been radically destabilized and reconstructed. As with earlier transformations, the Internet of the World will unfold over many years, but its scope and significance are difficult to overestimate.

Yet for all the great potential of these developments, there is a catch. New services that restructure relationships among buyers and sellers, workers and managers, or consumers and producers tend to raise significant legal and regulatory concerns. When business models fail to line up with the animating assumptions of the law, confusion and opposition inevitably result. Sometimes the opposition comes from industries challenged by the new upstarts, who they argue are competing unfairly by ignoring settled legal obligations. Sometimes, it comes from governmental actors or advocates worried about erosion of legal protections or tax revenues. To name just some of the issues, controversies have arisen about the legality of on-demand services under

49. Of course, that extreme endpoint will not ever be reached, both because of technical and cost limitations, and because of human resistance to excessive automation and control. And the diffusion process, as with any major technological shift, will be bumpy and in some areas slower than anticipated.

50. According to the U.S. Census Bureau, e-commerce sales represented 6.8% of total retail sales in the third quarter of 2015. U.S. CENSUS BUREAU NEWS, QUARTERLY RETAIL E-COMMERCE SALES: 4TH QUARTER 2016, at 2 (2016), https://www.census.gov/retail/mrts/www/data/pdf/ec_current.pdf. Digital advertising represented 28% of the U.S. total in 2014. See Kenneth Olmstead & Kristine Lu, *Digital News—Revenues Fact Sheet*, in STATE OF THE NEWS MEDIA 2015, at 17, 18 (2015), <http://www.journalism.org/2015/04/29/digital-news-revenue-fact-sheet/>.

local and state laws,⁵¹ responsibility for taxes and fees,⁵² data privacy,⁵³ consumer protection requirements,⁵⁴ compliance with the Americans with Disabilities Act,⁵⁵ anti-competitive practices,⁵⁶ discrimination,⁵⁷ and the legal status of workers.⁵⁸

Such conflicts are inevitable with significant technology-fueled market transformations. There will always be winners and losers. And the new providers run differently than those operating when the existing legal or regulatory arrangements were drawn up. The stakes in these situations are high, and not just in terms of allocating economic rents. Significant and hard-won protections for workers' rights, consumers, competition, and other important values may be undermined. On the other side, the potential multiplier effects downstream may stifle innovation.

As predictable questions came to the fore, many on-demand startups and their cheerleaders reacted by opposing any government involvement.⁵⁹ When Hillary Clinton, during her 2016 presidential campaign, stated that the On-Demand Economy is "creating exciting economies and unleashing innovation" but "also raising hard questions about work-place protections and what a good job will look like in the

51. See, e.g., Douglas MacMillan, *Uber Laws: A Primer on Ridesharing Regulations*, WALL ST. J. (Jan. 29, 2015, 10:37 PM), <http://blogs.wsj.com/digits/2015/01/29/uber-laws-a-primer-on-ridesharing-regulations>.

52. See Cohen & Zehngebot, *supra* note 3, at 35; Shu-Yi Oei & Diane M. Ring, *Can Sharing Be Taxed?*, 93 WASH. U. L. REV. 989, 1026 (2016).

53. See Peppet, *supra* note 22, at 143–44.

54. See Cohen & Zehngebot, *supra* note 3, at 35; Katz, *supra* note 3, at 1113.

55. See Nina Strohlic, *Uber: Disability Laws Don't Apply to Us: Is Uber Letting Its Drivers Dodge The Americans With Disabilities Act?*, DAILY BEAST (May 21, 2015, 5:15 AM), <http://www.thedailybeast.com/articles/2015/05/21/uber-disability-laws-don-t-apply-to-us.html>.

56. See Katz, *supra* note 3, at 1091–92; Erica Fink, *Uber's Dirty Tricks Quantified: Rival Counts 5,560 Canceled Rides*, CNNMONEY (Aug. 12, 2014, 3:11 PM), <http://money.cnn.com/2014/08/11/technology/uber-fake-ride-requests-lyft/>.

57. See Benjamin Edelman et al., *Racial Discrimination in the Sharing Economy: Evidence from a Field Experiment 2* (Harv. Bus. Sch., Working Paper No. 16-069, 2016), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2701902.

58. See *O'Connor v. Uber Techs., Inc.*, 82 F. Supp. 3d 1133, 1148 (N.D. Cal. 2015); Katz, *supra* note 3, at 1104.

59. See, e.g., CHRISTOPHER KOOPMAN ET AL., *THE SHARING ECONOMY AND CONSUMER PROTECTION REGULATION* 5 (2014); Adam D. Thierer, *The Internet of Things and Wearable Technology: Addressing Privacy and Security Concerns Without Derailing Innovation*, RICH. 21 J.L. & TECH. 6 1 (2015) (urging "policymakers to allow [IoT] technologies to develop in a relatively unabated fashion"); Arun Sundararajan, *Trusting the 'Sharing Economy' to Regulate Itself*, N.Y. TIMES (Mar. 3, 2014, 12:01 AM), https://economix.blogs.nytimes.com/2014/03/03/trusting-the-sharing-economy-to-regulate-itself/?_r=0.

future,”⁶⁰ she was pilloried for standing in the way of innovation to please retrograde constituencies.⁶¹ Yet a closer examination shows that these “hard questions” need to be considered, and in some cases, addressed through government action. And the startup community itself is beginning to acknowledge that the process of engaging with government is more than an unfortunate necessity;⁶² it can be the surest means to preserve and extend opportunities for innovation and further growth.

This pattern should not be surprising. It was exactly what happened the first time internet-based platforms began to transform industries and create huge new markets. Twenty years ago, a wave of startups such as Netscape, eBay, Yahoo!, and Amazon burst onto the scene with hyperbolic growth rates and dramatic impacts on established industries. Legal and regulatory controversies were not far behind.

II. “IT WAS TWENTY YEARS AGO TODAY . . .” LESSONS FROM THE DOT-COM ERA

The legal tensions of the Internet of the World are not new. The previous waves of internet development did not go nearly so far in blurring the lines between online and offline activity because they were anchored in personal computers and smartphones. Yet despite those limitations, the innovations of internet-based online services, electronic commerce, and digital content distribution, beginning in the mid-1990s, represented a connection between the virtual and physical worlds at a scale never before seen. The resulting confusion gave birth to an array of legal and regulatory conflicts, centered fundamentally on the relationship of physical-world governments and the emergent realm of cyberspace. The tensions between traditional regulatory obligations and technological innovations seemed intractable—until they weren’t.

The internet that computer scientists developed in the 1970s and 1980s was for research and government uses, not commerce and consumer applications.⁶³ And then, suddenly, everything changed. In 1993, the National Center for Supercomputing Applications released

60. Arun Sundararajan, *The ‘Gig Economy’ Is Coming. What Will It Mean for Work?*, GUARDIAN (July 25, 2015), <https://www.theguardian.com/commentisfree/2015/jul/26/will-we-get-by-gig-economy>.

61. David McCabe & Tim Devaney, *Hillary Clinton’s Uber Problem*, HILL (July 24, 2015, 6:01 AM), <http://thehill.com/business-a-lobbying/248999-hillary-clintons-uber-problem>; William McGurn, *Uber Crashes the Democratic Party*, WALL ST. J. (July 20, 2015, 7:48 PM), <http://www.wsj.com/articles/uber-crashes-the-democratic-party-1437436110>.

62. See, e.g., Arika L. Pierce, *The Startup’s Guide to Government Relations*, STARTUP GRIND, <https://www.startupgrind.com/blog/the-startups-guide-to-government-relations-1/> (last visited Mar. 15, 2017).

63. *The Invention of the Internet*, HISTORY.COM, <http://www.history.com/topics/inventions/invention-of-the-internet> (last visited Mar. 22, 2017).

software engineer Marc Andreessen's Mosaic, the first graphical web browser.⁶⁴ Shortly thereafter, the National Science Foundation privatized the internet backbone, removing the last restrictions on commercial traffic.⁶⁵ In 1995, Netscape went public with a spectacular first-day valuation of nearly \$3 billion.⁶⁶ The internet economy was off and running.

Around the same time, academics and others puzzled over the legal implications of the newly opened realm of "cyberspace." It was a heady period, with startups such as eBay, Amazon, and Yahoo! getting off the ground amid the economic boom of the roaring nineties. Not long before, H. Ross Perot ran for President in 1992 advocating "electronic town halls" as a new form of direct democracy.⁶⁷ And the Clinton-Gore Administration that took office the following year trumpeted the potential of a National Information Infrastructure or "information superhighway."⁶⁸ *Wired* Magazine debuted in January 1993, declaring that "the Digital Revolution is whipping through our lives like a Bengali typhoon."⁶⁹

64. See JAMES GILLIES & ROBERT CAILLIAU, *HOW THE WEB WAS BORN* 236–37 (2000).

65. See Brett Frischmann, *Privatization and Commercialization of the Internet Infrastructure: Rethinking Market Intervention into Government and Government Intervention into the Market*, 2 COLUM. SCI. & TECH. L. REV. 1, 19–21 (2001) (describing the privatization process); Jay P. Kesan & Rajiv C. Shah, *Fool Us Once Shame on You—Fool Us Twice Shame on Us: What We Can Learn from the Privatizations of the Internet Backbone Network and the Domain Name System*, 79 WASH. U. L.Q. 89, 111–12 (2001) (describing the NSFNet privatization); Kevin Werbach, *Only Connect*, 22 BERKELEY TECH. L.J. 1233, 1256–57 (2007) (explaining how privatization set the framework for internet interconnection).

66. See Devon-Ritchie, *Netscape, One of the First World Wide Web Browsers, Goes Public and Doubles in Value on Its First Day of Trade*, FAMOUS DAILY, <http://www.famousdaily.com/history/netscape-goes-public.html> (last visited Mar. 22, 2017).

67. Anthony Lewis, *Abroad at Home; Governing by Television*, N.Y. TIMES (June 7, 1992), <http://www.nytimes.com/1992/06/07/opinion/abroad-at-home-governing-by-television.html>; *Perot's 'Electronic Town Hall' Woudn't Work*, N.Y. TIMES (June 21, 1992), <http://www.nytimes.com/1992/06/21/opinion/1-perot-s-electronic-town-hall-wouldn-t-work-592592.html>.

68. See generally NATIONAL INFORMATION INFRASTRUCTURE INITIATIVES: VISION AND POLICY DESIGN (Brian Kahin & Ernest J. Wilson eds., 1997) (referring to the Clinton Administration's National Information Infrastructure initiative); Brian Kahin, *The Internet and the National Information Infrastructure*, in PUBLIC ACCESS TO THE INTERNET 3, 3–23 (Brian Kahin & James Keller eds., 1995) (discussing the "information infrastructure"); Al Gore, Vice President, *Information Superhighways Speech* (Mar. 21, 1994), <http://vlib.iue.it/history/internet/algorespeech.html> (using the term, "information superhighways").

69. Andrew Leonard, *Wired: The Book*, SALON (Aug. 20, 1998, 3:00 PM), http://www.salon.com/1998/08/20/featureb_12/.

In hindsight, the level of excitement and the financial valuations of many dot-com startups far exceeded their real impact in the 1990s.⁷⁰ The internet was accessible only to those with personal computers, on slow and intermittent dial-up connections. It was almost entirely an American phenomenon. So many of the infrastructural components of today's global internet economy, from mobile smartphones to cloud computing platforms to social networks to open source software stacks, did not yet exist. Yet many of the massive success stories of today trace their roots, either directly or by imitation of ideas hatched before their time, to that original Cambrian explosion of startups.

This period of technological and business innovation was also a fertile time for legal innovation. As the size and significance of the digital economy grew, legal and regulatory conflicts became increasingly acute. The initial thrust of the new wave of startups was toward new unregulated spaces. In time, though, the action shifted. Where the leading voices of the digital economy at first thought they could avoid government involvement, they began to recognize the inevitability of law and regulation playing a significant role. And then, many began to support government action as the best means to preserve openness and business opportunities. This shift was not universal, nor did the evolution always follow the same chronology. However, the pattern was unmistakable.

A. Idealism: Government as Anachronism

The *leitmotif* of the time was that technology could free communities from traditional instruments of centralized governments. In 1994, author Howard Rheingold, an influential theorist of cyberspace, published *The Virtual Community*, suggesting that users could define their own rules and develop rich social fabrics online.⁷¹ Writer Kevin Kelly's *Out of Control* appeared the same year, describing the potential of distributed social and technological systems to self-regulate in the manner of biological systems.⁷² Four influential futurists released a "Magna Carta for the Knowledge Age" calling for "repealing Second Wave laws" to realize the potential of the new era.⁷³

70. Investors eventually agreed. The collapse of the dot-com bubble in 2000 wiped out trillions of dollars of stock-market value. Amir Sufi & Atif Mian, *Why the Housing Bubble Tanked the Economy and the Tech Bubble Didn't*, FIVETHIRTYEIGHT (May 12, 2017, 6:03 AM), <https://fivethirtyeight.com/features/why-the-housing-bubble-tanked-the-economy-and-the-tech-bubble-didnt/>.

71. HOWARD RHEINGOLD, *THE VIRTUAL COMMUNITY* 268 (1994).

72. See generally KEVIN KELLY, *OUT OF CONTROL* 100 (1994) (comparing computerized technologies to living things).

73. See Esther Dyson et al., *Cyberspace and the American Dream: A Magna Carta for the Knowledge Age*, 12 INFO. SOC'Y 295, 296 (1996).

This was the period immediately following the collapse of the Soviet Union, when images of individuals swarming over the Berlin Wall to proclaim their freedom were fresh in everyone's mind. The entrepreneurs, developers, and investors who flocked to Silicon Valley and other startup hotspots knew exactly who were the freedom fighters of the future and who were the doddering hulks of the past.

Thus, while some considered how territorial law might regulate online activity, unsurprisingly, many of the leading lights of the era thought that territorial law should not control. Among the first shots across the bow was a polemic from John Perry Barlow, former Grateful Dead lyricist and co-founder of the Electronic Frontier Foundation (EFF), a public interest group promoting digital rights. Barlow's "Declaration of the Independence of Cyberspace" inveighed against the notion that territorial sovereigns had any rights to govern cyberspace.⁷⁴ It was grandiloquent and short on substance, but it struck a nerve. Over the remainder of the 1990s, several legal academics made common cause with Barlow, developing various concepts of online self-governance.⁷⁵

The dot-com bubble was inflating at the same time as these legal developments. Netscape's Initial Public Offering (IPO) opened the floodgates to a series of startups whose massive market capitalizations seemed out of step with their tiny revenues and non-existent profits.⁷⁶ The more the naysayers dismissed the "New Economy,"⁷⁷ the bigger the valuation numbers grew, in many cases surpassing iconic brick-and-mortar brands.⁷⁸ As one example, Priceline, which at the time of its initial public offering reported \$35 million in annual revenue and a net loss of \$114 million, was worth more than United, Continental, and Northwest Airlines combined.⁷⁹ If the old ways of building and valuing companies were being left behind, why not the old ways of regulating them?

74. John Perry Barlow, *A Declaration of the Independence of Cyberspace*, ELEC. FRONTIER FOUND. (Feb. 8, 1996), <https://www.eff.org/cyberspace-independence>.

75. See, e.g., I. Trotter Hardy, *The Proper Legal Regime for "Cyberspace,"* 55 U. PITT. L. REV. 993, 1004 (1994); David R. Johnson & David G. Post, *Law and Borders: The Rise of Law in Cyberspace*, 48 STAN. L. REV. 1367, 1388 (1996); David G. Post, *Governing Cyberspace*, 43 WAYNE L. REV. 155, 166–67 (1996); Joel R. Reidenberg, *Governing Networks and Rule-Making in Cyberspace*, 45 EMORY L.J. 911, 919 (1996).

76. See Devon-Ritchie, *supra* note 66; John Shinal, *Netscape: The IPO That Launched an Era*, MARKETWATCH (Aug. 5, 2005, 6:05 PM), <http://www.marketwatch.com/story/netscape-ipo-ignited-the-boom-taught-some-hard-lessons-20058518550>.

77. KEVIN KELLY, *NEW RULES FOR THE NEW ECONOMY* 1 (1998).

78. *Id.* at 98–99. At least until the bubble popped in 2000.

79. See Saul Hansell, *Business Travel; Priceline.com Stock Zooms in Offering*, N.Y. TIMES (Mar. 31, 1999), <http://www.nytimes.com/1999/03/31/business/business-travel-pricelinecom-stock-zooms-in-offering.html>.

The “cyberlibertarians” made two kinds of arguments: descriptive and normative. They claimed that government could not feasibly regulate online services could not because the internet did not recognize national or other political boundaries.⁸⁰ Its technical architecture moved packets dynamically from router to router, often using different paths for portions of the same connection, with no regard to the physical location of any waypoint along the journey. In fact, the internet was engineered to do so. In the words of technologist John Gilmore, “The [internet] treats censorship as damage and routes around it.”⁸¹ Unlike other communications and media networks, it had no central management point. Governments might issue an order against a website or an Internet service provider, but if that entity was not physically located within their borders, they could neither enforce the decree nor stop the flow of packets.⁸²

The other dimension of the argument was that even if states and private litigants could bring online activity to heel, they should not. Cyberspace had a right to be left alone, to govern itself.⁸³ It was not just technologists and radical scholars who sang this tune. The White House under President Bill Clinton issued a white paper in 1997 titled, “A Framework for Global Electronic Commerce,” which expressed as its first principle that “the private sector should lead” in the development of online commercial activity.⁸⁴ While not actually endorsing the cyberlibertarian program (it was, after all, a policy report issued by the U.S. government), the Framework cemented the rhetorical preeminence of the “hands-off” regulatory approach in this period.

At first, it seemed as though such idealistic approaches would carry the day. The opening battle in the legal wars over cyberspace regulation was a rout for the anti-regulatory upstarts. Concerned about a potential flood of digital pornography, Congress incorporated the Communications Decency Act (CDA)⁸⁵ into a massive 1996 overhaul of U.S. communications laws, prohibiting indecent or obscene speech online.⁸⁶

80. See Johnson & Post, *supra* note 75, at 1368.

81. RICHARD ROGERS, THE INTERNET TREATS CENSORSHIP AS A MALFUNCTION AND ROUTES AROUND IT?: A NEW MEDIA APPROACH TO THE STUDY OF STATE INTERNET CENSORSHIP 243 (2009), http://www.govcom.org/publications/full_list/Rogers_in_Parikka_Spam_book_optimized.pdf.

82. See Johnson & Post, *supra* note 75, at 1371–72.

83. *Id.* at 1402.

84. THE WHITE HOUSE, A FRAMEWORK FOR GLOBAL ELECTRONIC COMMERCE 4 (1997). The Author was part of the team that developed the *Framework* while serving as Counsel for New Technology Policy at the Federal Communications Commission.

85. Pub. L. No. 104-104, tit. V, 110 Stat. 56, 133–43 (codified in scattered sections of 18 and 47 U.S.C.).

86. 47 U.S.C. § 223 (2012).

Cyberlibertarians were outraged. The Federal Communications Commission (FCC) regulates indecent content on broadcast media such as television and radio, but the internet, cyberlibertarians argued, is different. Online activists and companies, including the largest web-based services of the day, turned their web pages black in protest.⁸⁷ Groups such as the EFF mobilized against the law, which they believed would chill online speech and business innovation.⁸⁸ Barlow's "Declaration" was in fact penned in direct response to the CDA's passage as part of the Telecommunications Act of 1996.⁸⁹

In *Reno v. ACLU*,⁹⁰ decided in 1997, the Supreme Court upheld a lower court ruling and invalidated the CDA on First Amendment grounds.⁹¹ The vote was unanimous. The outcome seemed to presage an era in which online communities might, as legal scholars David Post and David Johnson promoted in an influential *Stanford Law Review* article, develop their own rules outside of those tied to territorial borders.⁹² Those who wanted a family-friendly environment could choose digital communities with more restrictive content policies; governments should not be deciding the character of cyberspace as a whole.⁹³ To the cyberlibertarians, *Reno* warned of what would happen when territorial states tried to meddle in non-territorial cyberspace.

B. Realism: Government as Bully

The cyberlibertarian perspective soon provoked a contrary view from self-styled "cyber-realists."⁹⁴ They claimed that even if the online world

87. See Anthony Collings, *Home Pages to Go Black in Protest*, CNN (Feb. 7, 1996), http://www.cnn.com/TECH/9602/cyber_censors/index.html; Peter H. Lewis, *Protest, Cyberspace-Style, for New Law*, N.Y. TIMES (Feb. 8, 1996), <http://www.nytimes.com/1996/02/08/us/protest-cyberspace-style-for-new-law.html>. A similar protest more than a decade later was influential in defeating the proposed Stop Online Piracy Act and Protect IP Act (SOPA-PIPA) in Congress. See Hayley Tsukayama & Sarah Halzack, *Web Sites Go Dark in SOPA Protest Against Plans to Ban Online Piracy*, WASH. POST (Jan. 18, 2012), https://www.washingtonpost.com/business/technology/web-sites-go-dark-in-sopa-protest-against-plans-to-ban-online-piracy/2012/01/18/gIQAmWfD8P_story.html?utm_term=.2f179de48f41.

88. Parker Higgins, *The Web's First Blackout Protest: The CDA, 20 Years Later*, ELEC. FRONTIER FOUND. (Feb. 23, 2016), <https://www.eff.org/deeplinks/2016/02/webs-first-blackout-protest-cda-20-years-later>.

89. See Barlow, *supra* note 74.

90. 521 U.S. 844 (1997).

91. *Id.* at 885.

92. See Johnson & Post, *supra* note 75, at 1367.

93. Johanna M. Roodenburg, "Son of CDA": *The Constitutionality of the Child Online Protection Act of 1998*, 6 COMM. L & POL'Y 227, 256-57 (1998).

94. See, e.g., Easterbrook, *supra* note 6, at 208 (proposing that regulators develop a "sound law of intellectual property," and then apply it to cyberspace); Jack L. Goldsmith, *Against*

created different contexts for legal disputes, and debates over extraterritorial extension of state power, the fundamental issues involved were not new, nor were the solutions.⁹⁵ The cyber-realists found the cyberlibertarian dream of disregarding or sweeping away traditional legal structures hopelessly naïve.⁹⁶ They predicted that whatever rhetorical victories the cyberlibertarians might achieve, established governments and legal systems would assert themselves when needed to govern online activity.⁹⁷ To the realists, power is what matters. And governments, sometimes prodded by interest groups, are still the ones who wield it.

While the cyberlibertarians celebrated the dawning of a new era of freedom and innovation, others worried. Established companies and legislators saw danger in the rise of certain online services, especially those challenging media and content industries.⁹⁸ The CDA was an early example, but not the only one. In fact, John Perry Barlow and technology entrepreneur Mitch Kapor created the EFF to defend digital rights in 1990, even before the commercial internet took off, in response to intrusive law enforcement actions against software providers and private online services.⁹⁹ The cyberlibertarian view that cyberspace heralded the withering away of state power was disproven even before it became prominent.

The cyber-realists, for the most part, did not attack the digital economy. They recognized that it could create new opportunities for both business and free expression. Instead, they criticized the view that the growth of cyberspace implied an escape from historical legal and governance mechanisms.¹⁰⁰ The *Reno* decision overturned a bad law; it did not suggest anything about other laws without the same constitutional infirmities. And the border-crossing dimension of digital activity was no more challenging than garden-variety international commercial transactions, which spawned pragmatic legal innovations such as

Cyberanarchy, 65 U. CHI. L. REV. 1199, 1244 (1998) (arguing that “national and international regulations of cyberspace transactions are legitimate and feasible”).

95. Goldsmith, *supra* note 94, at 1201.

96. EVGENY MOROZOV, *THE NET DELUSION* 318 (2011).

97. See Neil Weinstock Netanel, *Cyberspace Self-Governance: A Skeptical View from Liberal Democratic Theory*, 88 CALIF. L. REV. 395, 452 (2000) (exploring various areas where state intervention in cyberspace may be warranted).

98. LAWRENCE LESSIG, *THE FUTURE OF IDEAS* 130 (2001).

99. See *A History of Protecting Freedom Where Law and Technology Collide*, ELEC. FRONTIER FOUND., <https://www.eff.org/about/history> (last visited Mar. 27, 2017); see also Mitchell Kapor, *Civil Liberties in Cyberspace*, 265 SCI. AM. 158, 158 (1991).

100. See generally Netanel, *supra* note 97 (discussing governmental involvement in cyberspace regulation).

international arbitration.¹⁰¹ Activity online, the realists asserted, could be regulated, should be, and would be.

Within a decade, the evidence was clear: the cyber-realists were vindicated. In case after case, state actors and private litigants pierced the veil of cyberspace.¹⁰² And as internet start-ups went public and grew into large global businesses, with tens of thousands of employees and vast physical and financial assets, it became both harder and less common for them to insist on fundamental differentiation from other companies.¹⁰³

In a seminal example, Yahoo! bowed to demands from a French court that it remove Nazi memorabilia from its online auction site, even though the servers involved were in the United States, where the transaction was clearly protected under the First Amendment.¹⁰⁴ If governments cared enough about enforcement, they were often able to get their way, especially as major internet companies increasingly did business—and therefore had business reasons to respond—in many countries around the world.¹⁰⁵ Predictions that governments could not ever control their citizens' online speech were belied when China implemented an effective network of filters across all of the links connecting its internal internet traffic with the rest of the world.¹⁰⁶ These efforts to reintroduce political borders to the internet are imperfect but enough to refute the cyberlibertarian contention that states are impotent to restrict online activity beyond their borders.¹⁰⁷

Perhaps the most influential case illustrating the law's power to tame cyberspace was the fate of Napster, the pioneering music-sharing service. Few companies garnered so much interest and excitement so fast, and few were extinguished so quickly by legal action.¹⁰⁸ Napster's blaze of glory

101. See Goldsmith, *supra* note 94, at 1246.

102. See JACK GOLDSMITH & TIM WU, WHO CONTROLS THE INTERNET? ILLUSIONS OF A BORDERLESS WORLD 180–81 (2006).

103. *Id.* at 5–8.

104. See Michael Geist, *Is There a There There? Toward Greater Certainty for Internet Jurisdiction*, 16 BERKELEY TECH. L.J. 1345, 1349 (2001) (noting that “[f]ew cyberlaw cases have attracted as much attention as the Yahoo! France” decision).

105. See Jack Goldsmith & Timothy Wu, *Digital Borders: National Boundaries Have Survived in the Virtual World—and Allowed National Laws to Exert Control over the Internet*, LEGAL AFF. (Jan./Feb. 2006), http://www.legalaffairs.org/issues/January-February-2006/feature_goldsmith_janfeb06.msp.

106. See ACCESS CONTROLLED: THE SHAPING OF POWER, RIGHTS, AND RULE IN CYBERSPACE 461 (Ronald J. Deibert et al. eds., 2010); Goldsmith & Wu, *supra* note 105.

107. See James Fallows, “*The Connection Has Been Reset*,” ATLANTIC (Mar. 2008), <http://www.theatlantic.com/magazine/archive/2008/03/andldquothe-connection-has-been-resetandrdquo/6650/>.

108. The Napster brand was sold and reconstituted for a licensed music service after the P2P system was shut down. However, it never regained a fraction of its prior scale. Michael Gowan,

ended ignominiously, as the courts declared its business model of enabling direct sharing of copyrighted content to involve contributory copyright infringement.¹⁰⁹ Even though Napster had influential champions in the legal academy¹¹⁰ as well as financial support from powerful venture capitalists and Bertelsmann (one of the major record labels),¹¹¹ it could not operate without the sanction of the legal system.

Today, the late-1990s clarion calls for a cyberspace that governed itself, beyond the reach of “weary giants of flesh and steel,”¹¹² are taught mostly as historical curiosities. The internet boom is seen as a story of wealth creation and innovation within the real economy, not an alternative to it. The watchword of post-2000 startups is “disruption,” implying the new will take the place of the old, not merely offer a different path.¹¹³ In this rhetorical framing, the failure of the self-styled New Economy lay in its refusal to engage the Old Economy, based on a vain belief that it could simply ignore the past.¹¹⁴ Yet this account misses a critical element. Amid the conflicts between cyberlibertarians and cyber-realists emerged a third thread, which affirmatively sought out government involvement in shaping the future of cyberspace.

C. *Post-Realism: Government as Solution*

The cyber-realists rejected the notion of a self-governing digital sphere, but that did not mean government had any special role in online activity. From their perspective, cyberspace was not special: it was no more inherently open, innovative, or creative than other environments.¹¹⁵ It was only of interest to regulators where there were spillover effects in the physical world, as when defamatory speech in an online forum caused injury to real people.

Requiem for Napster, PC WORLD (May 18, 2002, 12:17 PM), http://www.pcworld.idg.com.au/article/22380/requiem_napster/.

109. See *A & M Records, Inc. v. Napster, Inc.*, 239 F.3d 1004, 1029 (9th Cir. 2001) (finding Napster file-sharing service guilty of contributory copyright infringement).

110. See LAWRENCE LESSIG, *THE FUTURE OF IDEAS: THE FATE OF THE COMMONS IN A CONNECTED WORLD* 131 (2001).

111. See JOSEPH MENN, *ALL THE RAVE: THE RISE AND FALL OF SHAWN FANNING’S NAPSTER* 160 (2003); Stefanie Olsen, *Record Labels Sue Napster Investor*, CNET (Apr. 22, 2003), <http://www.cnet.com/news/record-labels-sue-napster-investor>.

112. Barlow, *supra* note 74.

113. See CLAYTON CHRISTIANSEN, *THE INNOVATOR’S DILEMMA: WHEN NEW TECHNOLOGIES CAUSE GREAT FIRMS TO FAIL* (2013). Technology industry proponents have widely bastardized Christiansen’s disruption theory to equate any new startup as good and any established company or industry as bad. See Jill Lepore, *The Disruption Machine*, NEW YORKER (June 23, 2014), <http://www.newyorker.com/magazine/2014/06/23/the-disruption-machine>.

114. See Lepore, *supra* note 113.

115. MOROZOV, *supra* note 96, at 320.

Those who saw something valuable and unique in the new online environment originally viewed government as the greatest threat to its vitality. Soon, however, dangers appeared from other quarters. In these situations, government authorities were the best hope for preserving the dynamism of cyberspace, against threats from private actors or other governments.¹¹⁶ The realists were right: sovereign power still mattered. Yet they were wrong in thinking its only application was in the physical world. The turn to government as a facilitator and guarantor of digital dynamism is the most underappreciated aspect of the dot-com era.¹¹⁷

Historical examples in which significant segments of the internet community welcomed government action included the Microsoft antitrust case, the Internet Tax Freedom Act, and network neutrality. They all date to around 1998, a few years after the first flood of internet enthusiasm among analysts and markets but still early in the trajectory of the digital economy.

1. Microsoft

The first great turn toward government as a solution was the Department of Justice's antitrust case against Microsoft. At the dawn of the internet era, Microsoft cast a long shadow over the nascent online environment. It dominated the personal computer industry, with its Windows operating system enjoying over 90 percent market share and its Office application software not much behind.¹¹⁸ Virtually all personal devices accessing the internet ran Windows (Apple was then a non-factor and smartphones did not yet exist), and Microsoft's Internet Explorer browser quickly became the dominant application for accessing the World Wide Web.¹¹⁹

In 1998, the U.S. government sued the software company, claiming that it was illegally tying other products to its dominant Windows operating system.¹²⁰ The trial court agreed, and the Justice Department

116. GOLDSMITH & WU, *supra* note 102, at 129.

117. The failure to appreciate the enabling role of government in the digital economy parallels a similar blind spot regarding the networking infrastructure of the internet. *See generally* Kevin Werbach, *The Federal Computer Commission*, 84 N.C. L. REV. 1, 4 (2005) (noting that the FCC has, for the most part, been a positive driving force in the technology sector).

118. *See* Jamey Keaten & John Frederick Moore, *US Targets Microsoft*, CNNMONEY (May 18, 1998, 8:01 PM), http://money.cnn.com/1998/05/18/technology/microsoft_suit. In 1998, Microsoft was briefly the world's most valuable company by market capitalization. *See* Jay Greene, *For a Few Minutes, Microsoft Is World's Most Valuable Company*, SEATTLE TIMES (Sept. 5, 1998, 12:00 AM), <http://community.seattletimes.nwsourc.com/archive/?date=19980905&slug=2770248>.

119. Nicholas Economides, *The Microsoft Antitrust Case*, 1 J. INDUS. COMPETITION & TRADE 7, 22 (2001).

120. *United States v. Microsoft*, 87 F. Supp. 2d 30, 35 (D.D.C. 2000); Economides, *supra*

pressed for a breakup of the company into application and operating system providers.¹²¹ Government intervention in Microsoft's business practices, especially the claims based on Microsoft's actions toward online services, represented a huge move to shape the trajectory of the internet market.

Many companies saw the Department of Justice intervention as essential to competitive opportunities on the digital frontier. In particular, Netscape, then the most prominent startup of the World Wide Web era, actively promoted and assisted the investigation.¹²² Its outside lawyer, Gary Reback, became the face of anti-Microsoft advocacy, organizing a coalition of technology companies to argue in favor of antitrust action.¹²³ The companies believed that an unchecked Microsoft would use its power to prevent the internet from emerging as a truly open environment for innovation.¹²⁴

Thus, the arguments for action against Microsoft paralleled the arguments against government regulation of indecent online speech or P2P file-sharing technology: preserve the internet as a space where any company could succeed and any individual could express herself. There were clear analogies between the Microsoft case and the U.S. government's last great antitrust crusade in network industries, the breakup of the AT&T telephone monopoly.¹²⁵

Support for the government's case against Microsoft was far from universal among internet companies. Many feared that once government could shape competitive arrangements in the software industry, it would not stop with Microsoft. The level of endorsement, however, showed that the story of cyberlaw was not as simple as it first seemed. The proponents of an open and unconstrained internet environment might achieve their goals through the means of government action, rather than limits on it.

note 119, at 10.

121. *Microsoft*, 87 F. Supp. 2d at 56.

122. See William H. Page & Seldon J. Childers, *Software Development as an Antitrust Remedy: Lessons from the Enforcement of the Microsoft Communications Protocol Licensing Requirement*, 14 MICH. TELECOMM. & TECH. L. REV. 77, 94 (2007) (explaining how a Netscape white paper played a key role in prodding the Department of Justice to act).

123. Reback later wrote a book expanding on this thesis. See generally GARY L. REBACK, *FREE THE MARKET!* (2009) (arguing for government intervention in the free market). More recently, he has pushed for antitrust action against Microsoft's current nemesis, Google. See James Temple, *Antitrust Bulldog Gary Reback Pushes Google Probe*, SFGATE (Jan. 24, 2011, 4:00 AM), <http://www.sfgate.com/business/article/Antitrust-bulldog-Gary-Reback-pushes-Google-probe-3161423.php>.

124. See Temple, *supra* note 123.

125. See Steve Bickerstaff, *Shackles on the Giant: How the Federal Government Created Microsoft, Personal Computers, and the Internet*, 78 TEX. L. REV. 1, 7 (1999); Philip J. Weiser, *Regulating Interoperability: Lessons From AT&T, Microsoft, and Beyond*, 76 ANTITRUST L.J. 271, 273 (2010).

In the end, the government's action against Microsoft was more influential than it might outwardly appear. President George W. Bush took office in 2001, and his administration quickly settled with Microsoft, abandoning the structural remedies the Clinton Administration had sought.¹²⁶ From that point forward, however, Microsoft was a subtly different company. Its patina of invincibility had been marred, and its culture began to rein in the kinds of practices that had earned it the government's attention.¹²⁷ Microsoft invested significantly in its legal and government affairs operations. Newer companies such as Google, which grew up in the aftermath of the Microsoft case, did not wait to make similar investments.¹²⁸ They recognized that engagement with government was necessary, and potentially beneficial, even at relatively early stages of their development.¹²⁹

2. The Internet Tax Freedom Act

Please forward this to everyone you can...

There is a new bill in the US Congress that will affect ALL INTERNET USERS. CNN stated that the Government would in two weeks time decide whether to allow or not allow a Charge to YOUR phone bill equal to a long distance call each time you access the internet.

This affects us all! We cannot allow this to happen! Please visit the following URL and fill out the necessary form to let your Congressman know how you feel! The address is

126. See Timothy F. Bresnahan, *A Remedy That Falls Short of Restoring Competition*, 16 ANTITRUST 67, 67 (2001); Press Release, U.S. Dep't of Justice, Justice Department Informs Microsoft of Plans for Further Proceedings in the District Court (Sept. 6, 2001), https://www.justice.gov/archive/atr/public/press_releases/2001/8981.pdf.

127. See Sharon Pian Chan, *Long Antitrust Saga Ends for Microsoft*, SEATTLE TIMES (May 11, 2011), <http://www.seattletimes.com/business/microsoft/long-antitrust-saga-ends-for-microsoft>; Nancy Gohring & Grant Gross, *End of an Era: Microsoft Antitrust Oversight Ends*, IDG NEWS SERV. (May 11, 2011), <http://www.computerworld.com/article/2507961/enterprise-applications/end-of-an-era--microsoft-antitrust-oversight-ends.html>; John Heilemann, *The Truth, the Whole Truth, and Nothing but the Truth*, WIRED (Nov. 1, 2000), http://archive.wired.com/wired/archive/8.11/microsoft_pr.html ("The humbling of Microsoft is the last great business story of the 20th century and the first great riddle of the 21st.")

128. See Jeffrey H. Birnbaum, *Learning from Microsoft's Error, Google Builds a Lobbying Engine*, WASH. POST (June 20, 2007), <http://www.washingtonpost.com/wp-dyn/content/article/2007/06/19/AR2007061902058.html>.

129. Ironically, Google is now being accused of anti-competitive practices, and the company most aggressively lobbying antitrust authorities to take action is none other than Microsoft. See Danny Hakim, *Microsoft, Once an Antitrust Target, Is Now Google's Regulatory Scold*, N.Y. TIMES (Apr. 15, 2015), <http://www.nytimes.com/2015/04/16/technology/microsoft-once-an-antitrust-target-is-now-googles-regulatory-scold.html>.

<http://www.house.gov/writerep/>. Write your representative!¹³⁰

Ever since the 1990s, warnings such as the one above have circulated about an FCC “modem tax” on computer users. The issue originated with a 1983 FCC decision that computer-based “enhanced services” were *not* subject to interstate access charges that local telephone companies required long-distance carriers to pay.¹³¹ The FCC repeatedly denied its intent to impose a modem tax.¹³² Nonetheless, alarm that government actors might see online activity as a lucrative new source of revenue was instructive.

It should not be surprising that taxation concerns were among the first public policy fights to arise around the internet. Taxation and fees are the primary means by which governments fund their operations. If certain categories of activity are exempt from tax obligations, it puts pressure on government budgets. This is especially true in the United States today, in an era of deficit spending, with significant political opposition to any new revenue generation and an increasing share of the budget devoted to non-discretionary entitlements. Taxation can also significantly affect competition. If the government taxes some competitors in a market and does not tax others, those subject to the tax may be disadvantaged artificially. Compounding the issue, the smaller the taxpayer base, the more each must pay to generate a constant level of revenue. And if in response to the price imbalance, customers shift to the un-taxed providers, the tax-base erosion accelerates.

There are tens of thousands of taxing jurisdictions in America. Rejection of the cyberlibertarian claim that cyberspace is nowhere potentially means that it is everywhere, within striking distance of all of them. The only surefire way to keep all those government authorities from sinking their claws into online activity was through government action in the opposite direction.

In 1998, Congress passed the Internet Tax Freedom Act (ITFA)¹³³ for the first time. At a time when economic activity online was still tiny relative to brick-and-mortar transactions, Congress preemptively cut off

130. *Internet Access Charges*, SNOPEs, <http://www.snopes.com/inboxer/pending/internet2.asp> (last updated Feb. 3, 2008).

131. See *MTS & WATS Mkt. Structure*, 97 F.C.C.2d 682, 711–22 (1983).

132. See *The FCC, Internet Service Providers, and Access Charges*, FCC (Apr. 3, 2002), http://transition.fcc.gov/Bureaus/Common_Carrier/Factsheets/ispfact.html. The issue actually did not involve government charges or taxes at all but fees exchanged among private carriers.

133. Pub. L. No. 105-277, 112 Stat. 2681, 2681–719 (1998) (codified at 47 U.S.C. § 151 (2012)). The ITFA had a sunset clause. Congress subsequently extended it many times, before finally making it permanent eighteen years later. See Alan Fram, *Congress Bans Local Internet Taxes*, POST & COURIER (Feb. 10, 2016), http://www.postandcourier.com/business/congress-bans-local-internet-taxes/article_ecea2976-de9b-5ba0-bbf8-c8b4931c8403.html.

the ability for states and localities to raise revenues or protect incumbent businesses by targeting local sources of digital transactions.¹³⁴ The arguments in favor of such a step were the same ones the cyberlibertarians voiced: the internet was a great space of opportunity for innovation and creativity, which the entanglements of political actors should not weigh down.¹³⁵ Only this time, it was politicians arguing that positive government action was needed to preserve the dynamic internet.

The ITFA bars only discriminatory taxes on online services.¹³⁶ A tax or fee that applies equally to equivalent online and offline conduct is not forbidden. The challenge for any local or state taxing authority, however, is how to establish a nexus between its jurisdiction and the online actions being taxed.¹³⁷ The most prominent example are sales taxes. If a customer buys a book at a Barnes & Noble bookstore in Manhattan, that transaction is subject to city and state sales taxes. If the customer, while standing in the bookstore, pulls out a smartphone and buys the identical book from Amazon, it is not subject to such taxes, because the transaction does not occur in New York.¹³⁸

For some time, the conflict was between Amazon's view that sales tax should never apply to its transactions and states' argument that it always should. As with the broader cyberlaw debate, Amazon's objections to collection of sales tax were both normative and practical. It complained of the unfairness of serving as a tax collector for states and localities where it did not operate.¹³⁹ And it argued that it could not possibly keep track of and apply the hundreds of different tax rates in the jurisdictions it ships to.¹⁴⁰

Over time, both Amazon and its opponents have been willing to compromise. Amazon now collects sales tax for transactions involving

134. See Fram, *supra* note 133.

135. See, e.g., Nancy Weil, *Senate Passes Internet Tax Freedom Act*, CNN (Oct. 9, 1998, 11:25 AM), <http://www.cnn.com/TECH/computing/9810/09/nettax.idg/>.

136. JEFFREY M. STUPAK, CONG. RESEARCH SERV., R43772, *THE INTERNET TAX FREEDOM ACT: IN BRIEF 1* (2016).

137. See *Quill Corp. v. North Dakota*, 504 U.S. 298, 317–18 (1992); *Nat'l Bellas Hess v. Dep't of Revenue*, 386 U.S. 753, 759–60 (1967); *Scripto, Inc. v. Carson*, 362 U.S. 207, 210–12 (1960).

138. See Brian Fagan, *Taxation of Electronic Commerce: Avoiding an Inroad upon Federalism*, 49 *DRAKE L. REV.* 465, 481–82 (2001); Walter Hellerstein, *State Taxation of Electronic Commerce*, 52 *TAX L. REV.* 425, 462 (1997).

139. On the other side, proponents of online sales taxes argued that Amazon had an unfair advantage over local retailers, and its failure to collect sales taxes drained necessary state and local revenues. See Amelia Landenberger, *How Battles over Collection of Sales Taxes on Online Sales Will Affect Small Businesses—Especially Affiliates of Large Sellers Like Amazon.com*, 7 *OHIO ST. ENTREPRENEURIAL BUS. L.J.* 225, 232 (2012).

140. See *id.* at 230.

customers in almost half of U.S. states.¹⁴¹ Contrary to predictions, this has not caused big problems for Amazon.¹⁴² An all-or-nothing battle over taxation of electronic commerce has thus given way to a situation in which much is taxed, much of the time, but the growth of e-commerce has proceeded apace. The affirmative step of federal legislation, with the support of e-commerce providers, was a significant factor in this result. The ITFA both avoided overlapping and excessive internet taxation when it would have been most damaging and created breathing room for negotiations.

3. Network Neutrality

The recognition of government's potentially constructive role in the digital economy reached its zenith with the push for network neutrality rules against discrimination by broadband access providers.¹⁴³ Debates about the power of broadband providers to foreclose innovation began in the late 1990s with the unsuccessful fight for open access to early cable broadband systems.¹⁴⁴ Law professor Tim Wu introduced the term "network neutrality" in 2003, refocusing the effort from physical access to non-discrimination rules.¹⁴⁵ Now it was startups and internet-focused academics who were advocating government action, and more established companies, such as the incumbent telecommunications

141. See Greg Bensinger, *Which States Make You Pay an Amazon Sales Tax*, WALL ST. J. (Oct. 1, 2014, 1:47 PM), <http://www.wsj.com/articles/states-that-make-amazon-pay-sales-taxes-1412185657>.

142. Rich Smith, *Amazon's Sales Tax Move Changed Everything . . . and Nothing*, DAILYFINANCE (Apr. 29, 2014, 6:00 AM), <http://www.dailyfinance.com/2014/04/29/amazons-sales-tax-move-changed-everything-and-nothing/>; see also Christina Le, *The Honeymoon's Over: States Crack down on the Virtual World's Tax-Free Love Affair with E-Commerce*, 7 HOUS. BUS. & TAX L.J. 395, 408 (2007) ("Most e-businesses that exist solely in cyberspace, or are incorporated in only one state but sell nationwide, have taken advantage of the stringent standard and operated for many years without paying state sales and use taxes.").

143. See Brett M. Frischmann & Barbara van Schewick, *Network Neutrality and the Economics of an Information Superhighway: A Reply to Professor Yoo*, 47 JURIMETRICS 383, 384–89 (2007); Barbara van Schewick, *Towards an Economic Framework for Network Neutrality Regulation*, 5 J. ON TELECOMM. & HIGH TECH. L. 329, 331–34 (2007).

144. See Mark A. Lemley & Lawrence Lessig, *The End of End-to-End: Preserving the Architecture of the Internet in the Broadband Era*, 48 UCLA L. REV. 925, 929 (2001); Kevin Werbach, *The Architecture of Internet 2.0*, RELEASE 1.0, Feb. 1999, at 10. The open access debate began in 1998 with AT&T's acquisition of TCI, the largest cable operator, and its broadband access systems. Opponents of the merger urged the imposition of open access conditions to allow competing internet access providers to offer broadband service through the TCI platform. See James B. Speta, *Handicapping the Race for the Last Mile?: A Critique of Open Access Rules for Broadband Platforms*, 17 YALE J. ON REG. 39, 77 (2000).

145. Tim Wu, *Network Neutrality, Broadband Discrimination*, 2 J. ON TELECOMM. & HIGH TECH. L. 141, 141–44 (2003); see also Werbach, *supra* note 65, at 1238–43 (distinguishing interconnection and non-discrimination approaches to network openness).

carriers, issuing warnings about going too far in “regulating the internet.”¹⁴⁶

The network neutrality movement was built on the premise that online services were inherently dependent on other private actors, most notably the operators of the physical networks used to access and transport data on the internet.¹⁴⁷ If a broadband access provider discriminated against unaffiliated content providers or exacted a high access fee to reach its customers, allowing online providers to define their own rules was not a solution. One of the reasons the cyberlibertarian vision of the unregulated internet worked was that the participants had traditionally adhered to a set of norms that prevented classic economic hold-up behaviors.¹⁴⁸ Adherence to these norms was partly cultural and partly reflected the competitive dynamics in the early Internet.¹⁴⁹

By the mid-2000s, both of those factors changed. Broadband access providers were descended from telecommunications companies, not internet startups, so their business values did not necessarily reflect those of the network engineering community that gave birth to the internet.¹⁵⁰ And for both the online services and access provider market, a few companies became so dominant that they could make demands that others felt compelled to accept.¹⁵¹ In such an environment, government action was seen as the only way to alter the behavior of these players.¹⁵² Entrepreneurial technology startups weighed in aggressively in the debate, primarily in favor of stronger rules placing greater limits on the broadband providers.¹⁵³

146. The argument for network neutrality rules is not necessarily inconsistent with the earlier anti-regulatory spirit. Network neutrality proponents are concerned about private power limiting free expression and competition, not just public power. See Jasper P. Sluijs, *From Competition to Freedom of Expression: Introducing Article 10 ECHR in the European Network Neutrality Debate*, 12 HUM. RTS. L. REV. 509, 510 (2012).

147. See Van Schewick, *supra* note 143, at 337; Wu, *supra* note 145, at 148–49.

148. See Phillip J. Weiser, *The Future of Internet Regulation*, 43 U.C. DAVIS L. REV. 529, 534–35 (2009).

149. See *id.* at 534.

150. See *id.* at 535.

151. See John Blevins, *Death of the Revolution: The Legal War on Competitive Broadband Technologies*, 12 YALE J.L. & TECH. 85, 92–93 (2009).

152. See *id.* at 93–94.

153. See Julia Boorstin, *Why Start-Ups Are Also Against the FCC’s Net Neutrality Proposal*, NBC NEWS (July 15, 2014, 2:09 PM), <http://www.nbcnews.com/tech/tech-news/why-start-ups-are-also-against-fccs-net-neutrality-proposal-n156526>; Gerry Smith, *Tech Startups May Be the Last Line of Defense for Net Neutrality*, HUFFINGTON POST (May 2, 2014, 12:49 PM), http://www.huffingtonpost.com/2014/05/02/net-neutrality-tech-startups_n_5247506.html.

The network neutrality debate rages on.¹⁵⁴ Over time, however, its focus has shifted. The conflict no longer centers on whether broadband access providers may discriminate in arbitrary ways against services and applications on their networks. The providers themselves now accept that some discriminatory practices are harmful to competition and innovation.¹⁵⁵ The idea that government has a role to preserve the vitality and openness of the internet has become well-established, even if the specifics of that role remain controversial.

D. *Insights from History*

An outline can be distilled from this brief history of twenty years of cyberlaw. Debates followed a common pattern: oscillation between calls for self-regulation or “unregulation”¹⁵⁶ on the one hand and clumsy efforts to impose excessive regulation on the other, eventually giving way to accommodations in which government played more of a convening, legitimizing, and enforcing role than a rule-setting one.

From an historical perspective, the predictions that the internet and electronic commerce would have dramatic economic and social effects, eventually becoming pervasive in much of the world, proved accurate. The issues legal scholars raised from the internet’s earliest commercial growth, such as intermediary liability and intellectual property protection, have proven to be significant challenges to this day. Progress occurred not when government sat on its hands but when legal and

154. See Brent Kendall, *Appeals Court to Hear Arguments over FCC’s Net-Neutrality Rules*, WALL ST. J. (Aug. 3, 2015, 6:25 PM), <http://www.wsj.com/articles/appeals-court-to-hear-arguments-over-fccs-net-neutrality-rules-1438640757> (discussing the pending legal challenge to the FCC’s early 2015 decision); Rebecca R. Ruiz, *F.C.C. Sets Net Neutrality Rules*, N.Y. TIMES (Mar. 12, 2015), <http://www.nytimes.com/2015/03/13/technology/fcc-releases-net-neutrality-rules.html> (describing the FCC’s latest network neutrality rules, which involved reclassification of broadband access as a regulated telecommunications service).

155. See, e.g., David L. Cohen, *Surprise! We Agree with the President’s Principles on Net Neutrality: Reiterating Our Strong Support for the Open Internet*, COMCAST VOICES (Nov. 11, 2014), <http://corporate.comcast.com/comcast-voices/surprise-we-agree-with-the-presidents-principles-on-net-neutrality-reiterating-our-strong-support-for-the-open-internet> (claiming that Comcast supports network neutrality).

156. While it might be natural to refer to the position opposing government obligations on internet-based services as deregulatory, that would be something of a misnomer. The desire to avoid excessive regulation of nascent and innovative internet-based technologies was certainly consonant with the deregulation trend that had dominated administrative law in the United States since the 1980s. However, because internet-based services were generally not regulated to begin with, it is more appropriate to use a term coined by former FCC attorney Jason Oxman, in an agency white paper: unregulation. See Jason Oxman, *The FCC and the Unregulation of the Internet* (FCC Office of Plans & Pol’y, Working Paper No. 31, 1999), http://www.fcc.gov/Bureaus/OPP/working_papers/oppwp31.pdf.

regulatory actors took the initiative to institute reforms focused on universal goals rather than particular historical artifacts.

Government engagement with innovative new markets and industries can serve a number of positive goals.¹⁵⁷ These include legitimizing new business models, facilitating competition in cases of market failure, increasing trust in new services by setting baselines and remedies, restraining other government actors from harmful decisions, and eliminating situations in which vague or overlapping obligations create difficulties for new entrants. Government can also take an affirmative stand in favor of innovation or new entrants, such as by delaying imposition of requirements that would otherwise apply or imposing limitations on established firms that might crush them.

Each of the case studies involves a different form of government action. The Microsoft antitrust case involved remedial intervention to protect consumers and a well-functioning market. The ITFA was a preemptive strike against excessive claims by other government actors. And network neutrality involved direct economic regulation. The internet companies that supported these actions did not give government a blank check to do as it pleased in cyberspace; they endorsed specific actions to fix specific problems. Taken as a whole, though, these developments and others like them showed a newfound tolerance for legal and regulatory solutions.

III. THE LONG AND WINDING ROAD: LAW AND THE NEW NEW ECONOMY

The dot-com startups of the 1990s and those of today's Internet of the World face similar policy challenges, playing out in a similar pattern. Reflexive and restrictive government action can—and has—put a damper on innovation, wealth creation, and new services with major consumer and societal benefits. On the other hand, sometimes markets left alone create sub-optimal results, either measured in formal economic welfare terms or by societal values such as innovation and equity. And sometimes government action must kick-start markets themselves.

From an economic standpoint, regulation is a second-best solution to maximize welfare in cases of market failure, such as monopolization, informational asymmetries, and externalities.¹⁵⁸ As public-choice theorists have pointed out, regulation is also subject to political economies that can lead regulators to privilege the desires of interest

157. See Ranchordás, *supra* note 4, at 30.

158. See generally STEPHEN BREYER, REGULATION AND ITS REFORM 15–17 (1982) (discussing the efficacy of regulation in theory); 1 ALFRED E. KAHN, THE ECONOMICS OF REGULATION: PRINCIPLES AND INSTITUTIONS (1971) (same).

groups or regulated incumbents.¹⁵⁹ Regulation optimized for legacy industries can stifle innovation if it blocks or unfairly disadvantages new entrants.¹⁶⁰ However, regulators can just as easily design regimes that allow for and even promote innovation as a positive value.¹⁶¹

The development of the digital economy in its first decade shows how initial skepticism about government, and the view that government was an unchanging exogenous factor, gave way as situations arose in which government involvement was valuable or even necessary. The Microsoft antitrust case, the ITFA, and network neutrality were all cases in which significant segments of the technology industry came down on the side of direct government action. There is no reason to believe the pattern will be any different for the On-Demand Economy and the other emerging digital market segments today.

None of this is to suggest that regulators are always right. Governmental actors are fallible, subject to political forces, and often stuck with imperfect policy implements. Regulators frequently make hard choices. For example, views differ about whether the FCC's network neutrality rules are a victory or defeat for innovation.¹⁶² It is telling, however, that most of the startups and smaller internet-based services providers that weighed in actively supported stronger FCC rules.¹⁶³ The important point is that the debate has moved from one about whether the FCC should take interest in discriminatory practices of broadband providers to how, when, and under what circumstances it should act.

The story for the new digital ecosystem is playing out very similarly to the past. Many legal and regulatory flashpoints are emerging.¹⁶⁴ The initial debate framing is whether to regulate, with each side making dire predictions about consequences of the opposing outcome. Yet over time, it becomes clear that government action can help as much as hurt the new service providers in developing and solidifying their markets. Four

159. See BREYER, *supra* note 158, at 20; see also Richard Posner, *Theories of Economic Regulation*, 5 BELL J. ECON. 335, 341 (1974); George J. Stigler, *The Theory of Economic Regulation*, 2 BELL J. ECON. 3, 4 (1971).

160. See Ranchordás, *supra* note 4, at 30.

161. See *id.* at 31; Richard S. Whitt, *Adaptive Policymaking: Evolving and Applying Emergent Solutions for U.S. Communications Policy*, 61 FED. COMM. L.J. 483, 487 (2009).

162. See Tim Wu & Christopher S. Yoo, *Keeping the Internet Neutral? Tim Wu and Christopher Yoo Debate*, 59 FED. COMM. L.J. 575, 575, 577 (2007).

163. See, e.g., Letter from Automatic et al. to the Fed. Comm'n's Comm'n (Feb. 18, 2015), <http://engine.is/wp-content/uploads/14-28-Feb-18-2015-Engine-Letter.pdf> (advocating strong network neutrality rules on behalf of a large number of internet startups); see also Boorstin, *supra* note 153 (describing startup advocacy in favor of stronger net neutrality rules); Smith, *supra* note 153.

164. See generally Katz, *supra* note 3 (surveying a variety of legal issues for the sharing economy); Peppet, *supra* note 22, at 93–95 (discussing discrimination, privacy, security, and consent issues for the Internet of Things).

examples illustrate this pattern: regulatory classification, algorithmic monopolies, taxation or fees, and platform responsibility.¹⁶⁵

A. *Regulatory Classification*

The first and most prominent issue concerns how to classify new services that do not easily fit into available legal categories. Not surprisingly, the initial position of on-demand and other startups is that they cannot and should not be subject to the old rules and therefore should be left to regulate themselves. Their predecessors made the same argument in the 1990s, when cyberlibertarianism was in full swing. Equally unsurprisingly, a contrary movement urges that regulators bar the on-demand providers from operating unless they meet the requirements of existing regulations. Neither option is tenable. Both government actors and the new entrants must take the initiative to update legal regimes. Despite the noisy debate, this is beginning to take place.

1. Ignoring the Rules?

Former Uber CEO Travis Kalanick, the most visible embodiment of the On-Demand Economy, has described himself as a “freedom fighter” because of his efforts to overcome unnecessary regulations.¹⁶⁶ The rapid growth of on-demand services without affirmative legal authorization, sometimes in open defiance of existing regulations, has created the misimpression that regulatory arbitrage is a necessary aspect of on-demand business models.¹⁶⁷ In this, they mirror their predecessors of the dot-com era.

In the early days of cyberlaw, internet-based services focused primarily on moving digital assets (music, software, etc.) or digitizing the

165. These are by no means the only legal and regulatory issues for the emerging Internet of the World. Most of the others, though, extend from the basic questions of regulatory classification or the decision about relative responsibilities of the platforms and their front-line workers. Others are not unique to the Internet of the World. For example, Internet of Things devices can collect large amounts of potentially very sensitive personal data, often without users’ awareness. See Peppet, *supra* note 22, at 108–11. Uber specifically has been the subject of controversy over privacy practices, based on its ability to track users’ movements. See Natasha Singer & Mike Isaac, *Uber Data Collection Changes Should Be Barred, Privacy Group Urges*, N.Y. TIMES (June 22, 2015), http://www.nytimes.com/2015/06/23/technology/uber-data-collection-changes-should-be-barred-privacy-group-urges.html?_r=0. These are important questions, but in many ways, they are extensions of privacy and security debates about online advertising, social networks, digital mapping, and other services stretching back to the early days of the commercial internet.

166. Lydia Depillis, *Uber Mensch*, NEW REPUBLIC (Apr. 29, 2013), <https://newrepublic.com/article/113059/ubers-travis-kalanick-fights-startups-playing-his-own-game>.

167. See Edelman & Geradin, *supra* note 3, at 327; Brishen Rogers, *The Social Costs of Uber*, 82 U. CHI. L. REV. DIALOGUE 85, 87 (2015).

process of transacting around physical goods (Amazon, eBay, etc.). In a number of cases, entrants sought to arbitrage established legal regimes that governed such activities. YouTube and other video hosting platforms skirted intellectual property rules. Skype and other voice over internet protocol (VOIP) services ignored communications regulation.¹⁶⁸ PayPal sought to evade banking regulation.¹⁶⁹ Even Google, by storing the full text of web pages without permission, disregarded copyright protections to build its search index.¹⁷⁰ None of these services would have enjoyed the same success had they waited for unambiguous approval of their business models before launching. In fact, YouTube beat out other video hosting platforms of the time, such as Google, partly based on its willingness to look the other way (or worse) on infringing material.¹⁷¹

Many legally questionable services from the dot-com era eventually succeeded in solidifying their status, either by convincing courts and regulators they were complying with existing rules or by convincing legislators and administrative agencies to revise the rules. Of course, this was not always the case. Napster and several other services pushing the limits of copyright, in particular, found themselves on the wrong side of court decisions, leading to their demise.¹⁷²

Today, Uber's business model of entering markets without legal authorization is most directly analogous to P2P startups like Napster and Skype.¹⁷³ Of 276 cities in which Uber operated at the end of 2014, just

168. VOIP services were initially in a legal gray area in the United States, but many countries clearly prohibited them at the time of introduction. See Mark C. Del Bianco, *Voices Past: The Present and Future of VOIP Regulation*, 14 *COMMLAW CONSPICUOUS* 365, 381 (2006) (“[I]n many countries laws provided for a monopoly on voice service by a single, often government-owned, entity, so VoIP service by any other entity was automatically illegal . . .”).

169. See Mark E. Budnitz, *Consumer Payment Systems: New Products and Services, New Law and New Problems*, 56 *CONSUMER FIN. L.Q. REP.* 52, 53 (2002) (“PayPal’s legal status is unclear, making legal recourse by consumers problematic. PayPal claims it is a money transmitter, subject to state money transmitter laws, but several states have disputed that claim. . . . If PayPal is not a money transmitter, then it likely is an unchartered bank, operating illegally without a charter.”).

170. Google’s caching and linking practices were eventually challenged under copyright law and found non-infringing. See, e.g., *Field v. Google, Inc.*, 412 F. Supp. 2d 1106, 1109–10 (D. Nev. 2006).

171. David Kaplan, *YouTube-Viacom, Part Two: YouTube Founders’ Emails Show Struggles over Copyrighted Works*, GIGAOM (Mar. 18, 2010, 4:14 PM), <https://gigaom.com/2010/03/18/419-youtube-viacom-part-two-youtube-founders-e-mails-show-struggles-over-co> (documenting how YouTube’s founders tolerated and sometimes encouraged distribution of popular infringing content to grow usage of their service).

172. See *supra* note 108 and accompanying text.

173. See Benjamin Edelman, *Whither Uber? Competitive Dynamics in Transportation Networks*, *COMPETITION POL’Y INT’L*, Spring/Autumn 2015, at 30, 36, <https://www.competitionpolicyinternational.com/wp-content/uploads/2016/03/Competition-Volumen-w-cover-11-Num-1.pdf> (drawing an analogy between Uber’s market entry strategy and Napster).

seventeen had passed ordinances expressly authorizing its business.¹⁷⁴ In most major cities around the world, only licensed taxis (often subject to restrictions on entry through a medallion system) or licensed livery (black car) services can provide for-hire transportation.¹⁷⁵ Uber, which views itself as a software application that matches independent drivers and riders, fits neither category well.¹⁷⁶ So in most cases, it has simply begun operating and then pushed local regulators to recognize it.¹⁷⁷ Other on-demand services such as Airbnb have also set up shop and expanded rapidly without regulatory authorization.¹⁷⁸

The argument in favor of this approach is that local governments move too slowly and are beholden to incumbent providers, so innovators must take matters in their own hands if they hope to succeed.¹⁷⁹ In a typical example, prominent venture capitalist and essayist Paul Graham tweeted in 2012 that “Uber is so obviously a good thing that you can measure how corrupt cities are by how hard they try to suppress it.”¹⁸⁰ Uber provides a convenient service to many users frustrated with taxis, so it has a ready-made army of supporters to point to and leverage in its battles against

174. See Eva Grantsimran Khosla, *Here’s Everywhere Uber Is Banned Around the World*, BUS. INSIDER (Apr. 8, 2015, 11:03 AM), <http://www.businessinsider.com/heres-everywhere-uber-is-banned-around-the-world-2015-4>; MacMillan, *supra* note 51.

175. Jenny Che, *9 Countries That Aren’t Giving Uber an Inch*, HUFFINGTON POST (Aug. 12, 2015, 12:29 PM), http://www.huffingtonpost.com/entry/uber-countries-governments-taxi-drivers_us_55bfa3a9e4b0d4f33a037a4b (listing numerous cities across the world that have banned transportation services like Uber).

176. In New York City, for example, Uber is in conflict with the city over issues such as access for riders with disabilities, contributions to traffic congestion, and collection of taxes to support mass transit. See Matt Flegenheimer & Emma Fitzsimmons, *City Hall and Uber Clash in Struggle over New York Streets*, N.Y. TIMES (July 16, 2015), <http://www.nytimes.com/2015/07/17/nyregion/city-hall-and-uber-clash-in-struggle-over-new-york-streets.html>.

177. See Schumpeter, *Shredding the Rules*, ECONOMIST (May 2, 2015), <http://www.economist.com/news/business/21650142-striking-number-innovative-companies-have-business-models-flout-law-shredding>; Karen Weise, *This is How Uber Takes over a City*, BLOOMBERG: BUSINESSWEEK (June 23, 2015, 6:06 PM), <http://www.bloomberg.com/news/features/2015-06-23/this-is-how-uber-takes-over-a-city>. Uber has taken the same position with regard to specific local obligations, such as the requirement to serve customers with disabilities. See Strohlic, *supra* note 55.

178. See Dana Palombo, *A Tale of Two Cities: The Regulatory Battle to Incorporate Short-Term Residential Rentals into Modern Law*, 4 AM. U. BUS. L. REV. 287, 289–90 (2015); Press Release, N.Y. State Office of the Att’y Gen., A.G. Schneiderman Releases Report Documenting Widespread Illegality Across Airbnb’s NYC Listings; Site Dominated by Commercial Users (Oct. 16, 2014), <http://www.ag.ny.gov/press-release/ag-schneiderman-releases-report-documenting-widespread-illegality-across-airbnbs-nyc> (claiming that 72% of Airbnb listings in New York were illegal).

179. See Sundararajan, *supra* note 59.

180. Paul Graham (@paulg), TWITTER (July 9, 2012, 3:49 PM), <https://twitter.com/paulg/status/222462460978937856>.

local regulators.¹⁸¹ The counterargument is well stated by Barry Korengold, president of the San Francisco Cab Drivers Association, in an article about Uber in *Vanity Fair*: “I think of them as robber barons. They started off by operating illegally, without following any of the regulations and unfairly competing. And that’s how they became big—they had enough money to ignore all the rules.”¹⁸²

One seeming contrast to the parallel dot-com era startups is that many of the rules governing on-demand service providers are local.¹⁸³ A decision to authorize Uber in New York or Chicago has no effect on its legitimacy in Portland or Philadelphia. However, this discontinuity parallels the long-identified conflict between territorial laws made by sovereign governments and online systems that are ignorant of political borders.¹⁸⁴ Many real-space markets are local because of physical limits on service delivery, communities, or information flow. Cyberspace, being inherently dimensionless, tends toward offerings that are national or even global.¹⁸⁵ The current generation of on-demand services further eliminates the boundaries between the physical and digital worlds.¹⁸⁶

The need to engage with local regulators adds additional complexity to the resolution of legal issues for on-demand services, but the basic controversies cover similar ground. Economics and customer needs for local services often vary little between cities, even when a different regulator is empowered in each one. Therefore, the ultimate equilibrium for services such as Uber is likely to involve similar treatment in all major

181. Fitz Tepper, *Uber Launches “De Blasio’s Uber” Feature in NYC with 25-Minute Wait Times*, TECHCRUNCH (July 16, 2015), <http://techcrunch.com/2015/07/16/uber-launches-de-blasios-uber-feature-in-nyc-with-25-minute-wait-times/>; see Weise, *supra* note 177.

182. Kara Swisher, *Man and Uber Man*, VANITY FAIR (Nov. 5, 2014, 12:00 AM), <http://www.vanityfair.com/news/2014/12/uber-travis-kalanick-controversy>.

183. See GORMAN GILBERT & ROBERT E. SAMUELS, *THE TAXICAB: AN URBAN TRANSPORTATION SURVIVOR* 142–43 (1982); Hannah A. Posen, *Ridesharing in the Sharing Economy: Should Regulators Impose Uber Regulations on Uber?*, 101 IOWA L. REV. 405, 410 (2015) (“While the federal government was largely responsible for taxi regulations during and after World War II, by the 1970s, regulating the taxi industry was largely left to municipalities.”). The exact structure varies. In Pennsylvania, the Pennsylvania Public Utility Commission regulates taxi services everywhere but Philadelphia, where the Philadelphia Parking Authority regulates them. See Justine Coyne, *PUC Grants Emergency Approval for Lyft, Uber*, PITT. BUS. TIMES (July 24, 2014, 10:50 AM), <http://www.bizjournals.com/pittsburgh/news/2014/07/24/puc-grants-emergency-approval-for-lyft-uber.html>; *Philadelphia Taxis & Limos*, PA. PUB. UTIL. COMMISSION, http://www.puc.state.pa.us/consumer_info/transportation/motor_carrier/philadelphia_taxis_limos.aspx (last visited Mar. 16, 2016).

184. See Johnson & Post, *supra* note 75, at 1367–70; Post, *supra* note 75, at 170–71.

185. See Johnson & Post, *supra* note 75, at 1370.

186. One consequence of this merger is that digitally-enabled services in one location can have significant spillover effects elsewhere. Such spillovers have been analyzed in the environmental law context but not extensively for online activity. See Sarah Light, *Precautionary Federalism and the Sharing Economy*, 66 EMORY L.J. 333, 353 (2017).

cities. The existing local regulation just makes the process of resolving the issues longer.

Backed by billions of dollars in funding, Uber has waged an aggressive campaign against localities refusing to authorize its business.¹⁸⁷ Local authorities in cities such as Philadelphia have responded by fining or even impounding cars of Uber drivers.¹⁸⁸ In Brisbane, Australia, Uber reportedly blocked the accounts of transport inspectors to prevent them from imposing fines for its unlicensed operation.¹⁸⁹ It has won some significant victories, including in New York City, where the mayor sought to cap the number of Uber vehicles and impose other conditions.¹⁹⁰ Yet in some locales, such as Germany, Uber has been forced to retreat under pressure from regulators.¹⁹¹

2. Finding Shared Interests

In predicting the path forward for Uber and other unauthorized on-demand services, the useful comparison is between the failure of Napster and Grokster, on the one hand, and the success of Skype's VOIP service, on the other. The P2P file-sharing services claimed that technology put them outside the reach of traditional legal rules, but the Supreme Court rejected their arguments.¹⁹² While these companies gained support from copyright reform advocates and other forces, they could not call upon significant government actors to advocate for their cause.

Skype, by contrast, took advantage of the FCC's unwillingness to classify VOIP as a telecommunications service, based on its desire to

187. See Weise, *supra* note 177. Airbnb has been similarly aggressive, mobilizing its users as a political force and spending millions to defeat a proposed San Francisco ordinance that would have greatly restricted its operations. See Conor Dougherty & Mike Isaac, *Airbnb and Uber Mobilize Vast User Base to Sway Policy*, N.Y. TIMES (Nov. 4, 2015), http://www.nytimes.com/2015/11/05/technology/airbnb-and-uber-mobilize-vast-user-base-to-sway-policy.html?_r=0; Carolyn Said, *Uber, Lyft, Airbnb Harness Users to Lobby Lawmakers for Them*, SFGATE (Jan. 11, 2015, 10:18 AM), <http://www.sfgate.com/business/article/Uber-Lyft-Airbnb-harness-users-to-lobby-6005562.php>.

188. See Victor Fiorillo, *PPA Impounds UberX Vehicles in Undercover Sting Operation*, PHILA. MAG. (Oct. 26, 2014, 1:17 PM), <http://www.phillymag.com/news/2014/10/26/uber-philadelphia-uberx-ppa-sting-impounds/>.

189. Steve Dent, *Transport Inspectors Say Uber Blocked Their Accounts to Avoid Fines*, ENGADGET (Jan. 15, 2015), <http://www.engadget.com/2015/01/15/uber-dodges-fines-australia/>.

190. Josh Dawsey & Andrew Tangel, *Uber Won't Face Limits on Surge Pricing Under NYC Council Legislation*, WALL ST. J. (Jan. 15, 2016, 6:37 PM), <http://www.wsj.com/articles/uber-wont-face-limits-on-surge-pricing-under-nyc-council-legislation-1452880443>.

191. See Mark Scott, *Uber's No-Holds-Barred Expansion Strategy Fizzles in Germany*, N.Y. TIMES (Jan. 3, 2016), http://www.nytimes.com/2016/01/04/technology/ubers-no-holds-barred-expansion-strategy-fizzles-in-germany.html?_r=0.

192. *Metro-Goldwyn-Mayer Studios, Inc. v. Grokster, Ltd.*, 545 U.S. 913, 919, 923–24, 940–41 (2005).

shield new entrants from regulation and to push down on inflated international settlement rates.¹⁹³ Government action enabled Skype to reach critical mass and legitimize its business model.¹⁹⁴ During the term of Chairman Michael Powell, who led the agency between 2001 and 2005, the FCC was particularly eager to promote “nascent services” free from regulation.¹⁹⁵ The FCC’s 2004 order declaring the FreeWorld Dialup service outside of traditional communications regulation, while not directly applicable to Skype, made clear the agency’s view that innovative services offering new options to consumers should be encouraged, rather than banned.¹⁹⁶ Other agencies took a similar approach to nascent digital services at the time. For example, the FDIC’s 2002 decision that the government should not regulate PayPal as a bank gave PayPal leverage against state regulators seeking to impose significant limitations on its digital payments business.¹⁹⁷

Eventually, the solution for Uber, Lyft, and other unauthorized on-demand services will be government action to create new rules that address the necessary public policy considerations, rather than fighting over whether the old rules apply.¹⁹⁸ Such steps would not only resolve legitimate public policy concerns, but also legitimize the on-demand services and thereby remove obstacles to their further growth and innovation. As Airbnb spokesman Christopher Nulty stated in response to calls for an ordinance governing short-term rentals in Boston, “We

193. See Chérie R. Kiser & Angela F. Collins, *Regulation on the Horizon: Are Regulators Poised to Address the Status of IP Telephony?*, 11 *COMMLAW CONSPECTUS* 19, 19, 24 (2003); Jonathan Lee, *Microsoft-Skype: The End of the “Free Lunch?”* (May 19, 2011, 3:41 AM), <http://www.telecomsense.com/2011/05/microsoft-skype-the-end-of-the.php>.

194. Lee, *supra* note 193.

195. Kathleen Q. Abernathy, Fed. Comm. Comm’n, Remarks Before the Federal Communications Bar Association, New York Chapter (July 11, 2002), <https://transition.fcc.gov/Speeches/Abernathy/2002/spkqa217.html>.

196. Petition for Declaratory Ruling That Pulver.com’s Free World Dialup Is Neither Telecomms. Nor a Telecomms. Serv., 19 FCC Red. 3307, 3317–20 (2004). For more details on the FCC’s approach to VOIP, see Kevin Werbach, *Off the Hook*, 95 *CORNELL L. REV.* 535, 564–65 (2010) [hereinafter Werbach, *Off the Hook*]; Kevin Werbach, *No Dialtone: The End of the Public Switched Telephone Network*, 66 *FED. COMM. L.J.* 203, 231 (2014) [hereinafter Werbach, *No Dialtone*].

197. See *Feds: PayPal Not a Bank*, CNET (May 19, 2002, 1:09 AM), <https://www.cnet.com/news/feds-paypal-not-a-bank/>.

198. Uber and Lyft have already switched toward advocating legislation at the state level, especially when it includes preemption of inconsistent or troublesome local regulation. See Light, *supra* note 186.

want cities to regulate Airbnb and make it easier for regular people to share their home, pay their bills and contribute to their community.”¹⁹⁹

The key for Skype and PayPal was that regulators were convinced these new entrants actually promoted public policy goals, and that necessary obligations could be enforced without legacy regulatory classifications. In the case of VOIP, the FCC adopted limited requirements, such as connection to 911 emergency service, on a piecemeal basis, carefully restricting the application to a narrow class of services.²⁰⁰ Major on-demand platforms have begun to advocate for a similar approach, distinguishing sweeping regulatory classification or restrictions they oppose from targeted initiative to address recognized problems. For example, Airbnb in November 2015 issued a “Community Compact” detailing affirmative steps it would take to work with regulators on acknowledged issues.²⁰¹

The process has gone farthest in the ride-hailing market. At least thirty-nine states have adopted laws defining and regulating “transportation network companies” (TNCs), with legislation under consideration in several others.²⁰² These laws provide an opportunity to ensure that the public policy goals of traditional regulations are achieved, even when the business model changes. They recognize that a choice between ill-fitting legacy rules and no rules at all will not produce a good outcome. And they show that the political process can operate affirmatively to address conflicts created by new digital businesses. For example, the Illinois law mandates:

- Insurance coverage;
- Driver background checks and licensing requirements;
- Zero tolerance for drugs and alcohol while driving;

199. Matt Rocheleau, *Lawmakers Worry Owners Taking Advantage of Airbnb*, BOS. GLOBE (Aug. 24, 2015), <https://www.bostonglobe.com/metro/2015/08/23/some-boston-housing-now-used-like-hotels-via-airbnb/deDVVOZf6EYYBmxDyWWHfJ/story.html>.

200. See Werbach, *No Dialtone*, *supra* note 196, at 232–33.

201. See Mike Isaac, *Airbnb Pledges to Work with Cities and Pay ‘Fair Share’ of Taxes*, N.Y. TIMES (Nov. 11, 2015), <http://www.nytimes.com/2015/11/12/technology/airbnb-pledges-to-work-with-cities-and-pay-fair-share-of-taxes.html>.

202. See Illinois Transportation Network Providers Act, 625 ILL. COMP. STAT. 57 (2016); *Transportation Network Companies*, PROP. CASUALTY INSURERS ASS’N AM., <http://www.pciaa.net/industry-issues/transportation-network-companies> (last visited Mar. 16, 2017); see also Decision Adopting Rules and Regulations to Protect Public Safety While Allowing New Entrants to the Transportation Industry, Rulemaking 12-12-011 (Cal. Pub. Util. Comm’n July 30, 2013), <http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M077/K112/77112285.PDF>.

- Transparency about fare calculation and receipts;
- Disclose of fare increases during surge pricing; and
- Non-discrimination for passengers.²⁰³

The key to these solutions, like the FCC's response to VOIP, is that they involve government action, but not a reflexive insistence on existing rules. While on-demand companies may initially reject any talk of regulation, they have had to adopt many of the same kinds of measures (such as driver background checks for the ride-hailing providers and insurance for lodging providers) that regulators might require. An authorized regulatory framework could increase consumer confidence in on-demand services, allowing them to reach an even larger segment of the population. Uber and Airbnb's willingness to advocate in favor of state legislation or municipal rules regulating their businesses, when they provide sufficient flexibility, suggest that movement in this direction is already occurring.

B. *Algorithmic Monopolies*

On-demand services create new competition for entrenched incumbents, often in markets subject to significant entry barriers under the existing configuration. On the other hand, they can themselves achieve a greater level of market power than the companies they displace. As already noted, the combination of software-based businesses and ubiquitous mobile devices mean that on-demand services can grow at hyperbolic rates.²⁰⁴ Network effects mean that successful platforms in network markets often tend toward dominant positions.²⁰⁵ Even the most mature on-demand markets are still young and fast-changing, so antitrust authorities have been hesitant to intervene, but over time, competition law concerns are likely to become a major concern in many of these areas. As a matter of timing, regulatory classification and basic issues of licensing and business authorization will come to a head sooner because they consider whether the new services can operate at all. As new legislation and collaboration with regulators resolve these issues, antitrust issues will become more prominent.

Uber, because of its hyperbolic growth and dominance of the ride-hailing markets, has already been subject to attacks as a monopolist, after

203. See Illinois Transportation Network Providers Act, 625 ILL. COMP. STAT. 57.

204. See *supra* text accompanying note 34.

205. Mark A. Lemley & David McGowan, *Legal Implications of Network Economic Effects*, 86 CALIF. L. REV. 479, 509, 523, 532, 592 (1998).

just six years in business.²⁰⁶ In the United States, Uber's one major competitor is Lyft, and it is many times smaller.²⁰⁷ Sidecar, the third player in the United States, shut down and sold off its assets in early 2016.²⁰⁸

Under U.S. antitrust law, having a large market share alone, even one considered a monopoly, is not itself grounds for action; the company must engage in some anti-competitive action to create or maintain the monopoly.²⁰⁹ There have been several accusations of abusive practices by Uber, including allegations that Uber local managers deliberately booked and then canceled thousands of fake trips on Lyft, occupying Lyft drivers so that Uber could gain a competitive advantage.²¹⁰ As Uber moves into other markets (such as delivery of goods) using its fleet of drivers,²¹¹ it will be subject to concerns about illegally tying to leverage its existing dominance. Uber has also continuously reduced prices in many markets in competition against Lyft, to the point where, despite Uber's incredible growth, it lost \$1.7 billion on \$1.2 billion in revenue through the first three quarters of 2015, according to leaked documents.²¹² This behavior opens Uber up to charges of predatory pricing. None of

206. See Felix Barber, *How Do We Fight 21st Century Monopolies Like Amazon, Google and Uber?*, BUS. JOURNALS (Dec. 11, 2014, 9:35 AM), <http://www.bizjournals.com/bizjournals/news/2014/12/11/fight-21st-century-monopolies-like-amazon-uber.html>; Susan Crawford, *Getting over Uber*, BACKCHANNEL (Oct. 16, 2015), <https://backchannel.com/getting-over-uber-fdf75faf7f6e>; Gregory Ferenstein, *The Next Internet Monopoly: Uber, the Transportation Network*, VENTUREBEAT (Aug. 20, 2014, 11:47 AM), <http://venturebeat.com/2014/08/20/the-next-internet-monopoly-uber-the-transportation-network/>.

207. See David Gelles & Mike Isaac, *Challenging Uber, Lyft Bets on a Road Wide Enough for Two*, N.Y. TIMES (Jan. 9, 2016), https://www.nytimes.com/2016/01/10/technology/challenging-uber-lyft-bets-on-a-road-wide-enough-for-two.html?_r=0. Uber does face significant competition from home-grown entrants in some other major countries, notably China and India, and several major players announced a global "anti-Uber" alliance in December 2015. See Aza Wee Sile, *Uber Rivals Form Alliance Covering Half of World's Population*, CNBC (Dec. 3, 2015, 7:53 PM), <http://www.cnn.com/2015/12/03/uber-rivals-didi-kuaidi-grabtaxi-lyft-ola-form-alliance-covering-half-of-worlds-population.html>. However, because ride-hailing markets are local, Uber's limited market share in China does not rebut concerns about its power in the U.S. market. See *id.*

208. See Gelles & Isaac, *supra* note 207.

209. Eric K. Clemons & Nehal Madhani, *Regulation of Digital Businesses with Natural Monopolies or Third-Party Payment Business Models: Antitrust Lessons Form the Analysis of Google*, 27 J. MGMT. INFO. SCI. 43, 72 (2011).

210. See Fink, *supra* note 56.

211. See Douglas Macmillan, *The \$50 Billion Question: Can Uber Deliver?*, WALL ST. J. (June 15, 2015, 10:34 PM), <https://www.wsj.com/articles/the-50-billion-question-can-uber-deliver-1434422042>.

212. See Eric Newcomer & Ellen Huet, *Facing a Price War, Uber Bets on Volume*, BLOOMBERG: BUSINESSWEEK (Jan. 21, 2016, 4:14 PM), <http://www.bloomberg.com/news/articles/2016-01-21/facing-a-price-war-uber-bets-on-volume>.

these concerns has yet given rise to federal antitrust action against Uber, but the potential is clear.

The contrary argument is that on-demand markets have little in the way of entry barriers from a technical standpoint. Because so many of the foundational aspects of these businesses are in shared infrastructure such as wireless connectivity, distributed among users in the case of mobile phones, or available as a service at affordable rates through platforms such as Amazon's cloud, startup capital requirements are far lower than for the equivalent legacy businesses. Often, significant licensing and regulatory requirements operate as entry barriers, but those are the ones the new providers disregard.²¹³ As a result, there is reason to believe market discipline will self-correct for anti-competitive practices. This leads some commenters to suggest there are not significant antitrust concerns in the on-demand world.²¹⁴

This perspective, however, fails to take into account the novel competition concerns that arise in an environment where physical assets and even people can be treated as information and manipulated through software driven by big data analytics.²¹⁵ The Microsoft antitrust case is instructive here.²¹⁶ The action against Microsoft involved novel questions about competition in network markets, the business dynamics of software, and the potential of courts and regulators to oversee technology choices.²¹⁷ The court had to decide whether Microsoft was illegally tying a browser (a piece of software) into an operating system (also a piece of software), and a number of other technical issues.²¹⁸ From the perspective of Netscape and the technology companies that pressed for government action, the issue was not regulation of software; it was the chilling of opportunities for competition and innovation.²¹⁹

For today's on-demand and IoT services, market share in the conventional sense is not the only dimension to consider. These platforms are based on software algorithms driven by significant volumes of real-

213. See *supra* Section III.A.

214. See Edelman and Geradin, *supra* note 3, at 10 (“To date, the growth of software platforms seems to trigger few competition law concerns, and even where certain software platforms have come to dominate their respective sectors, we see little sign of market structure that would prevent entry . . .”).

215. See *supra* text accompanying note 18.

216. See *supra* Subsection II.C.1.

217. See generally Lemley & McGowan, *supra* note 205, at 496 (explaining how network economic effects could raise significant issues for antitrust); Economides, *supra* note 119 (discussing the significance of network economics to an understanding of the issues in the Microsoft case).

218. Economides, *supra* note 119, at 26–28.

219. *Id.* at 27–29.

time data.²²⁰ The data itself potentially becomes the foundation for what have been called “algorithmic monopolies.”²²¹ The more data a service has, the better the quality of its decisions.²²² Even when there are no entry barriers in the conventional sense, a dominant player with control over data may have an insurmountable edge over potential competitors.²²³

In the case of Uber, predictive software algorithms decide where to direct drivers to minimize wait times for riders, even before the demand manifests. And Uber’s surge pricing mechanism increases fares (sometimes by a factor of five or more) at times of heavy demand.²²⁴ When criticized for charging more at times when riders needed the service most (such as during storms), Uber CEO Travis Kalanick stated, “We are not setting the price. The market is setting the price We have algorithms to determine what that market is.”²²⁵ Kalanick’s point was that the market-clearing price reflected supply and demand, and surge pricing incentivized more drivers to take to the roads. His phrasing, however, was telling. The market “is” whatever Uber’s algorithms say it is. The software controls not only the price, but the timing and boundaries of surge pricing, as well as what information is provided to drivers when. Uber can choose what factors to use in “determining” the market, including rewarding or disincentivizing certain classes of drivers, or even elbowing out competitors.²²⁶ The details and operation of the algorithms

220. See Matthew Stoller, *Uber’s Algorithmic Monopoly*, OBSERVATIONS ON CREDIT & SURVEILLANCE (Apr. 9, 2014, 6:45 PM), <http://mattstoller.tumblr.com/post/82233202309/ubers-algorithmic-monopoly-we-are-not-setting>.

221. See *id.*

222. A similar argument can be made about Google, which is able to provide the best search results because it has by far the largest share of queries. See Eric K. Clemons & Nehal Madhani, *Regulation of Digital Businesses with Natural Monopolies or Third-Party Payment Business Models: Antitrust Lessons from the Analysis of Google*, 27 J. MGMT. INFO. SCI. 43, 52, 54, 66 (2010). However, the search market is substantially different from on-demand services in that it is entirely digital, services are offered for free and monetized through advertising, and a search engine’s primary function is to direct users elsewhere.

223. See ALLEN P. GRUNES & MAURICE E. STUCKE, NO MISTAKE ABOUT IT: THE IMPORTANT ROLE OF ANTITRUST IN THE ERA OF BIG DATA 1–3 (2015), http://www.americanbar.org/content/dam/aba/publishing/antitrust_source/apr15_grunes_4_22f.authcheckdam.pdf. But see ANJA LAMBRECHT & CATHERINE E. TUCKER, CAN BIG DATA PROTECT A FIRM FROM COMPETITION? (2017), <https://www.competitionpolicyinternational.com/wp-content/uploads/2017/01/CPI-Lambrecht-Tucker.pdf> (arguing that possession of big data alone does not provide a sustainable competitive advantage).

224. See *Pricing the Surge: The Microeconomics of Uber’s Attempt to Revolutionise Taxi Markets*, ECONOMIST (Mar. 29, 2014), <http://www.economist.com/news/finance-and-economics/21599766-microeconomics-ubers-attempt-revolutionise-taxi-markets-pricing-surge>.

225. Marcus Wohlsen, *Uber Boss Says Surging Prices Rescue People from the Snow*, WIRED (Dec. 17, 2013, 6:30 AM), <http://www.wired.com/2013/12/uber-surge-pricing/>.

226. See Stoller, *supra* note 220.

are secret, so it is impossible to know from observation whether Uber is using them in anti-competitive or discriminatory ways.²²⁷

Another concern involves the potential that such decision making algorithms can cooperate with one another to engage in price fixing. Such “algorithmic cartels” may develop even without explicit instructions from the service providers because they represent an efficient solution to maximize each firm’s profits.²²⁸ Concerns about these scenarios are already developing around electronic commerce sites such as Amazon, where rival “bots” do battle to price merchandise on user-managed virtual storefronts.²²⁹ In an on-demand world, more and more resources that were previously subject to fixed prices or delivered by traditional service providers will be available through dynamically created algorithmic marketplaces. Just as the Microsoft antitrust trial forced an examination of the growing importance of personal computer software to existing and developing industries, on-demand services will bring algorithmic competition policy questions to the fore.

Finally, as the Internet of the World advances, on-demand services will become more foundational for commerce and communities. At some point, there should be consideration of whether some of them reach the level of importance coupled with potential for abuse that has in other industries given rise to utility regulation.²³⁰ Certain competitive tactics that are otherwise legitimate are off the table for firms that enjoy the benefits of controlling essential services.

As with the Microsoft trial, it will likely be current and potential competitors to the dominant on-demand providers who push for a fuller examination of the novel antitrust concerns. The dominant players may find that pulling back the curtain somewhat and providing access to information about algorithms or commitments against certain behaviors is preferable to risking an antitrust showdown. The FTC has formed a new Office of Technology Research and Investigation, which among

227. See FRANK PASQUALE, *THE BLACK BOX SOCIETY: THE SECRET ALGORITHMS THAT CONTROL MONEY AND INFORMATION* 4–16 (2015).

228. See Salil K. Mehra, *Antitrust and the Robo-Seller: Competition in the Time of Algorithms*, 100 MINN. L. REV. 1323, 1329 (2016); Maurice E. Stucke & Ariel Ezrachi, *Artificial Intelligence & Collusion: When Computers Inhibit Competition* 7 (Univ. of Tenn. Coll. of Law, Research Paper No. 267, 2015), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2591874; Jill Priluck, *When Bots Collude*, NEW YORKER (Apr. 25, 2015), <http://www.newyorker.com/business/currency/when-bots-collude>.

229. See Mehra, *supra* note 228, at 1335–36.

230. See Kevin Werbach, *Is Uber a Common Carrier?*, 12 I/S 135, 147–53 (2016) (arguing for application of the core principles of common carriage to new services that functionally operate as utilities).

other things has a mandate to examine algorithmic transparency.²³¹

C. Taxation and Fees

As described above, concerns about collection of sales taxes on e-commerce and imposition of discriminatory taxes on online activity were significant in the early days of the commercial internet.²³² Thanks to the ITFA and negotiated resolution, potential problems were overcome, or at least delayed to the point where they could be addressed through compromise.²³³

The growth of the On-Demand Economy raises two kinds of tax issues. The first involves collection of personal taxes from workers providing on-demand services, such as Uber and Lyft drivers.²³⁴ Though complicated by legal uncertainty about the status of these workers as employees or independent contractors, reference to existing rules can generally resolve such tax issues.²³⁵ The biggest issues are difficulties of awareness, reporting, and enforcement for large numbers of individuals in unfamiliar roles.²³⁶ In contrast, questions about the responsibility of the on-demand providers themselves to remit taxes and fees leads to thornier issues. These payments are a direct cost, so these companies are obviously eager to avoid being subject to them. Yet their failure to pay raises issues of equity with pre-existing providers, and, as with the sales taxation issues for e-commerce, drains funding from local and state governments.

1. We're Not Tax Collectors . . . or Are We?

The On-Demand Economy company most directly confronting taxation is Airbnb, which allows people to offer short-term rentals of apartments, houses, or rooms. Founded in 2008, Airbnb has grown almost as rapidly as Uber.²³⁷ In 2014, it averaged over one million guests per

231. Katherine Noyes, *The FTC Is Worried About Algorithmic Transparency, and You Should Be Too*, PCWORLD (Apr. 9, 2015, 8:36 AM), <http://www.pcworld.com/article/2908372/the-ftc-is-worried-about-algorithmic-transparency-and-you-should-be-too.html>.

232. See *supra* Subsection II.C.2.

233. See *supra* Subsection II.C.2.

234. See Oei & Ring, *supra* note 52, at 1009; Kathleen Pender, *If You Make Money in the Sharing Economy, the IRS Will Know*, SFGATE (Feb. 22, 2014, 2:43 PM), <http://www.sfgate.com/business/networth/article/If-you-make-money-in-the-sharing-economy-the-IRS-5258941.php>.

235. See Oei & Ring, *supra* note 52, at 1019–23.

236. See *id.* at 1052–54.

237. See Nassim Khadem, *Are Airbnb and Uber Creating a New Black Economy?*, SYDNEY MORNING HERALD (Feb. 14, 2015, 5:45 PM), <http://www.smh.com.au/business/are-airbnb-and-uber-creating-a-new-black-economy-20150212-13dg7p>.

month, and it now operates in over 30,000 cities worldwide.²³⁸ In general, Airbnb has taken a more conciliatory line toward governments than Uber.²³⁹ With regard to taxes, however, it has tussled with cities over the proper solution.²⁴⁰

Most major American cities impose a tax, in some cases a substantial one (14.5% in San Francisco, for example) on hotel rooms.²⁴¹ The hotel operator collects these taxes.²⁴² This contrasts with the Uber situation, where there is an option to tax individual workers as independent contractors if income taxes are not collected by Uber itself as an employer. Because Airbnb styles itself as a passive intermediary, it originally declined to add these local taxes to the rates that its hosts charged to their guests.²⁴³ From cities' viewpoints, however, this was a clear evasion of taxes by a direct competitor to traditional hotels.²⁴⁴ Nationwide, Airbnb was estimated to owe as much as \$200 million.²⁴⁵

The analogous issue for Uber involves fees imposed on for-hire transportation services to contribute to other government programs. In New York City, taxis must collect a fifty-cent fee on every fare, which the city uses to fund mass transit.²⁴⁶ Uber refuses to do so, although it charges all riders a one-dollar "Safe Rides Fee" in connection with its own costs for background checks and other safety-oriented activities.²⁴⁷ The transit fee does not directly affect taxi or Uber rides, but it contributes

238. *Id.* Analysts estimate Airbnb could surpass the world's largest hotel chains in bookings within a few years. See Michael B. Baker, *Barclays: Airbnb Usage to Surpass Hotel Cos., but Not for Business Travel*, BUS. TRAVEL NEWS (Jan. 16, 2015), <http://www.businesstravelnews.com/Hotel-News/Barclays-Airbnb-Usage-To-Surpass-Hotel-Cos-But-Not-For-Business-Travel>.

239. See Khadem, *supra* note 237.

240. See Joyce E. Cutler, *Cities Grappling with Challenges of How to Tax, Regulate Short-Term Rentals*, BLOOMBERG BNA (Oct. 21, 2014), <http://www.bna.com/cities-grappling-challenges-n17179897258/>; Brad Tuttle, *The Other Complication for Airbnb and the Sharing Economy: Taxes*, TIME (June 15, 2013), <http://business.time.com/2013/06/15/the-other-complication-for-airbnb-and-the-sharing-economy-taxes>.

241. See Cutler, *supra* note 240.

242. See James Mak, *Taxing Hotel Room Rentals in the U.S.*, 27 J. TRAVEL RES. 10, 10 (1988).

243. See Tuttle, *supra* note 240 (observing Airbnb's policy for reporting income, in that "the rules are unclear, [and] enforcement is almost nonexistent").

244. *Id.*

245. Phillip Matier & Andrew Ross, *Airbnb Pays Tax Bill of "Tens of Millions" to S.F.*, SFGATE (Feb. 18, 2015, 8:48 PM), <http://www.sfgate.com/bayarea/matier-ross/article/M-R-Airbnb-pays-tens-of-millions-in-back-6087802.php>.

246. See Bill de Blasio, *A Fair Ride for New Yorkers: How the City Should Respond to the Rapid Rise of Uber*, N.Y. DAILY NEWS (July 18, 2015, 11:00 AM), <http://www.nydailynews.com/opinion/bill-de-blasio-fair-ride-new-yorkers-article-1.2296041>.

247. Biz Carson, *Here's How Much Uber Charges for "Safe Ride" in Different US Cities*, BUS. INSIDER (Oct. 16, 2015, 12:11 PM), <http://www.businessinsider.com/us-cities-with-highest-uber-safe-rides-fees-2015-10>.

to the overall quality of transit in the city, particularly the level of traffic congestion.²⁴⁸

While there are arguments against charging taxi riders to help pay for subway expenses, they apply as much to taxis as Uber. The only reason Uber currently does not pay is that in New York City, it is classified as a livery car service, not a taxi provider, and the fee was only imposed on taxis.²⁴⁹ If Uber contributed, it would generate an estimated \$70 million per year for mass transit in New York.²⁵⁰

2. The Taxman Cometh

The debates over taxation and fees for on-demand services began as classic conflicts between governments seeking to impose obligations and new companies seeking to avoid them. Yet fairly quickly, there has been a significant shift. In particular, Airbnb has changed its tune. In February 2015, it paid an estimated \$25 million in back taxes to the city of San Francisco.²⁵¹ It is negotiating with several cities about arrangements that would require it to collect hotel taxes from its hosts.²⁵² The company wants these arrangements because they come with explicit authorization for Airbnb short-term rentals, which violate regulations in many jurisdictions.²⁵³ The company just serves as a pass-through for the taxes, which it takes out of hosts' share of revenues.²⁵⁴ So there is no direct financial cost for Airbnb to comply.²⁵⁵

Despite the company's newfound support for tax collection, Airbnb has not entirely given up its cyberlibertarian instincts. After the company

248. See de Blasio, *supra* note 246 (stating that “[m]ore than 2,000 new for-hire vehicles are being added to [the] streets [of New York] every month”).

249. See Jose Martinez, *Proposal to Add 50-Cent Surcharge onto Car Service Rides to Fund MTA Gains Steam*, NY1 (June 17, 2015, 10:15 PM), <http://www.ny1.com/nyc/all-boroughs/news/2015/06/17/proposal-to-add-50-cent-surcharge-onto-car-service-rides-to-fund-mta-gains-steam.html>.

250. See *id.*

251. See Matier & Ross, *supra* note 245.

252. *Id.*

253. See Ann Carrns, *Lodging Taxes and Airbnb Hosts: Who Pays, and How*, N.Y. TIMES (June 16, 2015), http://www.nytimes.com/2015/06/17/your-money/lodging-taxes-and-airbnb-hosts-who-pays-and-how.html?_r=0; Alison Griswold, *Why Airbnb Desperately Wants to Pay Hotel Taxes*, SLATE (Feb. 13, 2015, 7:00 PM), http://www.slate.com/articles/business/moneybox/2015/02/airbnb_hotel_taxes_why_does_the_sharing_economy_startup_want_to_pay_them.html.

254. Carrns, *supra* note 253.

255. Reducing hosts' revenues may lead fewer hosts to participate (thus reducing Airbnb's revenues) or cause hosts to raise rates to compensate (thus potentially suppressing demand). Either way, there could be some negative financial consequences from Airbnb's decision. Now that the company is well-established and dominant in its market, however, the displacement effects for both hosts and guests are likely to be limited.

began remitting hotel taxes in San Francisco, it ran an advertising campaign on light rail stations around the city.²⁵⁶ The ads, which included lines such as “Dear Public Library System, We hope you use some of the \$12 million in hotel taxes to keep the library open later,” provoked significant controversy.²⁵⁷ Airbnb seemed to be congratulating itself for complying with the law and treating government agencies with sarcasm. The company quickly apologized and promised to take them down.²⁵⁸ Nonetheless, the incident suggests Airbnb has not yet fully accommodated itself to engaging with government. Based on the pattern in other contexts, it is just a matter of time.

Uber is also moving toward acceptance of certain taxes or fees. Under a temporary deal with New York City, it has agreed to explore ways to contribute to mass transit.²⁵⁹ The company argues that it indirectly makes significant contributions to mass transit services through the sales taxes it collects, but those are not dedicated to any specific use.²⁶⁰ The issue has not yet been resolved, but the willingness of both sides to discuss a solution suggests that progress is being made.

Ultimately, the differential treatment involves the city’s decision to impose the fee on taxis but not car services. If the city imposed on all for-hire transportation providers, the argument for excluding Uber and Lyft would be weak. At that point, the debate could properly focus on whether such a fee is a good means of funding mass transit, not the technology used to provide the for-hire services. Perhaps the city should use other funding sources or should exempt carpooling services, such as Uber’s UberPool or Lyft’s Lyft Line, that share cars among multiple riders.²⁶¹

Ride-hailing services are likely to be the catalyst for re-examining many such transportation-oriented funding mechanisms at the local level. The equilibrium points will inevitably be somewhere between the status quo in which Uber and Lyft are non-compliant and the elimination of all

256. Julia Carrie Wong, *Airbnb Apologizes for Passive Aggressive Ads on Muni Shelters*, SF WEEKLY (Oct. 21, 2015, 6:22 PM), <http://archives.sfweekly.com/thesnitch/2015/10/21/passive-aggressive-pro-airbnb-ads-appear-on-muni-shelters>.

257. *Id.*

258. *See id.*

259. Associated Press, *Uber Strikes Surprise Last-Minute Deal with New York City*, CHRONICLE (July 23, 2015, 4:09 AM), <http://www.chroniclet.com/national-news/2015/07/23/Uber-strikes-surprise-last-minute-deal-with-New-York-City.html>.

260. Dan Rivoli, *Uber Pushes Against Mayor de Blasio That It Doesn’t Pay Enough in Taxes*, N.Y. DAILY NEWS (Aug. 24, 2015, 2:30 AM), <http://www.nydailynews.com/new-york/uber-claims-pays-fair-share-nyc-taxes-article-1.2335169>.

261. Andrew J. Hawkins, *Even Cynical New Yorkers Don’t Mind Sharing Uber Rides with Strangers*, VERGE (Nov. 9, 2015, 4:17 PM), <http://www.theverge.com/2015/11/9/9698658/uber-uberpool-nyc-october-ride-share-numbers>; *Meet Lyft Line*, LYFT, <https://www.lyft.com/line> (last visited Mar. 16, 2017).

such revenue sources from the ride-hailing industry. The example of sales taxes for e-commerce shows that complications can eventually be resolved in a manner that does not overly disadvantage innovative new market entrants. The process may not be easy, and some government actors will certainly continue to press for discriminatory or onerous taxes, but there is no realistic alternative. As with the legal classification of on-demand services, acceptance of the government role will speed the resolution process.

D. Platform Responsibility

On December 5, 2014, a young woman stepped into a hired car in New Delhi, India.²⁶² Instead of taking his passenger to her destination, the driver, Shiv Kumar Yadav, drove to a secluded location and raped her.²⁶³ Eight weeks later, the woman filed a lawsuit over her assault. There were two unusual features of the suit. The defendant was not Yadav.²⁶⁴ And the forum for the litigation was not India; it was the Northern District of California.²⁶⁵ The target was Uber, for which Yadav worked at the time of the attack.²⁶⁶

The New Delhi case generated significant notoriety, but it was not unique. In numerous other incidents passengers have accused drivers for Uber and similar on-demand transportation services of misconduct.²⁶⁷ These involve sexual assaults,²⁶⁸ physical attacks,²⁶⁹ and injuries due to

262. See Dominic Rushe, *Delhi Woman Sues Uber for "Negligence and Fraud" After Alleged Rape*, GUARDIAN (Jan. 29, 2015, 7:01 PM), <https://www.theguardian.com/world/2015/jan/29/delhi-woman-sues-uber-rape-negligence>.

263. *Id.*

264. Uber classified him, like all Uber drivers, as an independent contractor. *Id.*

265. *Id.*

266. The plaintiff voluntarily terminated the lawsuit prior to trial several months later, apparently after settling with Uber. See Dan Levine, *Indian Woman Who Sued Uber over Rape Accusation Ends Lawsuit*, REUTERS (Sept. 1, 2015, 3:13 PM), <http://www.reuters.com/article/us-uber-tech-rape-settlement-idUSKCN0R14GV20150901>.

267. See, e.g., Mark Macmurdo, *Hold the Phone! "Peer-to-Peer" Ridesharing Services, Regulation, and Liability*, 76 LA. L. REV. 307, 337–38 (2015) (citing *Teixeira v. Car Cab Three, Inc.*, 1994 Mass. App. Div. 154 (Dist. Ct. 1994)) (arguing that Uber and Lyft should be held liable for the acts of drivers regardless of how the drivers are classified).

268. See, e.g., Sharon Chen, *Ride Share Driver Accused of Sexually Assaulting Teen Girls*, FOX 5, (Sept. 21, 2016, 9:27 AM), <http://fox5sandiego.com/2016/09/21/rideshare-driver-arrested-for-assaulting-multiple-customers/>; Marisa Kendall, *Uber Sued over Alleged Rapes by Drivers*, CONSUMER FED'N CAL. (Oct. 9, 2015), <https://consumercal.org/uber-sued-over-alleged-rapes-by-drivers/>.

269. See, e.g., Ellen Huet, *Uber Rider Might Lose an Eye from Driver's Hammer Attack. Could Uber Be Held Liable?*, FORBES (Sept. 30, 2014, 9:37 PM), <http://www.forbes.com/sites/ellenhuet/2014/09/30/uber-driver-hammer-attack-liability>.

crashes allegedly involving reckless driving.²⁷⁰ Airbnb had its own scandal in 2011, when a guest robbed one of Airbnb's hosts, and the company tried to prevent the host from reporting about it.²⁷¹ Sporadic reports of similar incidents continue.²⁷²

In these situations, the question is what is needed to ensure against harmful conduct by individuals on the platform. This directly parallels a key issue dating from the early days of cyberlaw: intermediary liability. By their nature, on-demand services use networked software platforms and mobile devices to connect otherwise unaffiliated service providers and customers. They take individuals who otherwise might not even be offering commercial services and incorporate them into what feels to users like a huge, well-oiled business operation. In this way, they are similar to first-generation e-commerce sites such as eBay, which enables individual sellers to reach huge markets. When something goes wrong, does it make more sense to treat the sellers as atomic units or as cogs in a larger machine, operated by the platform intermediary?

1. Intermediary as Software Provider

Uber and Lyft declare in their terms of service that they are just software providers and thus not responsible for the conduct of drivers who happen to use their software to find riders.²⁷³ In Uber's telling, it serves as a directory matching drivers with customers: essentially, a souped-up phone book.²⁷⁴ This claim is eerily similar to the arguments from P2P services such as Napster and Grokster in the 1990s that they were merely directories connecting users interested in sharing files.²⁷⁵

270. See, e.g., Ron Lieber, *Fatal Collision Makes Car-Sharing Worries No Longer Theoretical*, N.Y. TIMES (Apr. 13, 2012), <http://www.nytimes.com/2012/04/14/your-money/relayrides-accident-raises-questions-on-liabilities-of-car-sharing.html>.

271. See Hayley Tsukayama, *Airbnb Burglary Victim Says Company Tried to Quiet Her*, WASH. POST (July 29, 2011), http://www.washingtonpost.com/blogs/faster-forward/post/airbnb-robbery-victim-says-company-tried-to-quiether/2011/07/29/gIQA7R03gI_blog.html.

272. See, e.g., Reuven Blau, *Unexpected Sex Party Destroys Pricy Chelsea Apartment*, N.Y. DAILY NEWS (Mar. 17, 2014, 12:16 AM), <http://www.nydailynews.com/new-york/unexpected-sex-party-destroys-pricy-chelsea-apartment-article-1.1723825>.

273. See *Lyft Terms of Service*, LYFT, <https://www.lyft.com/terms> (last updated Sept. 30, 2016); *Uber Terms and Conditions*, UBER, <https://www.uber.com/legal/usa/terms> (last visited Feb. 16, 2017).

274. See Emily Badger, *The Strange Tale of an Uber Car Crash and What It Means for the Future of Auto Insurance*, CITYLAB (Sept. 10, 2013), <http://www.citylab.com/commute/2013/09/real-future-ride-sharing-may-all-come-down-insurance/6832/> ("Some of them, like Uber, argue that they have created primarily technology platforms, modern-day phone books that connect people who already have cars (or car services) to people who want to ride in them.").

275. See JOHN ALDERMAN, SONIC BOOM: NAPSTER, MP3, AND THE NEW PIONEERS OF MUSIC 140–41 (2001) (including Napster attorney David Boies' statement to *Wired* magazine in which he described Napster as a "directory-service provider").

Those parties litigated those cases under copyright law, which is a strict liability offense that includes a concept of secondary liability where facilitators have knowledge and control over infringing activities.²⁷⁶ In *Metro-Goldwyn-Mayer Studios, Inc. v. Grokster, Ltd.*,²⁷⁷ the Supreme Court imposed liability even when the P2P services were fully distributed.²⁷⁸ The Court concluded that awareness and encouragement of widespread infringement was sufficient, even if the services had no records of any individual transaction.²⁷⁹

The “directory” argument has met with stiff resistance. It is formally true that Uber and Lyft own no cars and Airbnb owns no hotels, but they provide a service offering that competes directly with those who do. Riders look for “an Uber,” not a directory of drivers who happen to be nearby. The basic value proposition of on-demand services, and the Internet of the World more broadly, is the ability to stitch together otherwise independent entities into a seamless network.²⁸⁰ This is, after all, how companies such as Uber and Airbnb have grown so fast and transformed markets so dramatically. The argument that they are merely incidental facilitators of direct transactions between individuals flies in the face of reality.

Perhaps more importantly, the On-Demand Economy depends on trust.²⁸¹ For most individuals to feel comfortable stepping into a stranger’s car or apartment, they need to have some confidence above and beyond ordinary social mores. On-demand providers achieve this primarily through reputation and rating systems that overcome classic information asymmetries.²⁸² They also screen providers in their network,

276. See *Metro-Goldwyn-Mayer Studios, Inc. v. Grokster, Ltd.*, 545 U.S. 913, 929–30 (2005); Sverker K. Hgberg, Note, *The Search for Intent-Based Doctrines of Secondary Liability in Copyright Law*, 106 COLUM. L. REV. 909, 911 (2006).

277. 545 U.S. 913 (2005).

278. See *id.* at 939 (holding that defendant’s efforts to supply services was sufficient to warrant liability).

279. See *id.* at 923–24.

280. See *supra* Section I.A. This aspect of the Internet of the World represents the continuation of forces enabling social production, which have been evident since the beginning of the commercial internet era. See YOCHAI BENKLER, *THE WEALTH OF NETWORKS: HOW SOCIAL PRODUCTION TRANSFORMS MARKETS AND FREEDOM* 99 (2006).

281. See Jason Tanz, *How Airbnb and Lyft Finally Got Americans to Trust Each Other*, WIRED (Apr. 23, 2014, 6:30 AM), <http://www.wired.com/2014/04/trust-in-the-share-economy/>; Stephen Ufford, *The Future of the Sharing Economy Depends on Trust*, FORBES (Feb. 10, 2015, 9:00 AM), <http://www.forbes.com/sites/theyec/2015/02/10/the-future-of-the-sharing-economy-depends-on-trust/>.

282. See Adam Thierer et al., *How the Internet, the Sharing Economy, and Reputational Feedback Mechanisms Solve the “Lemons Problem,”* 70 U. MIAMI L. REV. 830, 855 (2016) (explaining how reputation and rating systems allow drivers and passengers to gain information about the other); Ufford, *supra* note 281.

and remove those who engage in misconduct or provide poor service.²⁸³ Customers are therefore trusting the platform, not the individual providers. As a practical matter, individual providers of on-demand services may not have the resources to fully compensate users for injuries.²⁸⁴ Unsurprisingly, therefore, neither regulators nor users have been satisfied that on-demand providers can shift liability to providers in their networks.²⁸⁵

2. Intermediaries and Their Providers

Another dimension concerns the legal relationship between the frontline providers and the on-demand platforms. For services such as Uber and Lyft, the question is whether the individuals who interact with customers should be classified as employees or independent contractors.²⁸⁶ Classification as employees, which the on-demand platforms generally resist,²⁸⁷ could among other things impose *respondeat superior* liability for those employees' actions.²⁸⁸ More generally, it would establish the networks as the primary service providers, rather than merely coordination tools, for collections of independent entrepreneurs. A decision to categorize Uber and Lyft drivers therefore also functions to categorize Uber and Lyft.

The "Internet of Things" conception of on-demand services controlling formerly unconnected objects through the network²⁸⁹ potentially cuts in both directions here. On the one hand, emphasizing the constitutive and directive role of the on-demand software platform, with the people at the edges operating as mere extensions, cuts against the story that the workers are independent contractors who just happen to use a mobile app. On the other hand, providers will be less interested in

283. Thierer et al., *supra* note 282, at 860.

284. See Katz, *supra* note 3, at 1099–1100.

285. See *id.* at 1072–73.

286. See, e.g., Robert Sprague, *Worker (Mis)Classification in the Sharing Economy: Trying to Fit Square Pegs into Round Holes*, 31 A.B.A. J. LAB. & EMP. L. 53, 68 & n.120 (2015) (discussing two class action lawsuits in which Uber and Lyft drivers sought classification as employees). Separate from the legal concern, some critics of the On-Demand Economy raise the concern that these businesses undermine worker protections. See Robert Reich, *Uber, Airbnb, and the "Share-the-Scraps" Economy*, CHRISTIAN SCI. MONITOR (Feb. 3, 2015), <http://www.csmonitor.com/Business/Robert-Reich/2015/0203/Uber-Airbnb-and-the-share-the-scraps-economy>.

287. In some cases, on-demand services have chosen to take on employees voluntarily, so that they can exercise greater control and reduce churn of frontline providers. See Stone, *supra* note 11.

288. See Jessica L. Hubley, *Online Consent and the On-Demand Economy: An Approach for the Millennial Circumstance*, 8 HASTINGS SCI. & TECH. L.J. 1, 9 (2016).

289. See *supra* notes 20–26 and accompanying text (describing on-demand platforms as examples of the Internet of Things).

treating workers as employees if they see them as fungible cogs in a system. The Internet of the World dramatically alters the dimension that traditionally distinguishes employees from contractors: control.²⁹⁰

Courts have not definitively resolved the worker classification issue.²⁹¹ A class action lawsuit in California arguing that ride-hailing platform drivers are employees survived summary judgment in spring 2015, with a trial set for June 2016.²⁹² The California Labor Commission ruled in 2015 that Uber drivers are employees;²⁹³ Uber appealed. As with the regulatory classification of on-demand services, a new legal category with elements of both employees and independent contractors may ultimately be needed.²⁹⁴ A key question will be the degree of responsibility the platform providers should assume.

However courts resolve the labor classification, the broader issue is what level of responsibility should inure to new kinds of platforms. Among the signal innovations of the Internet of the World is the way it engenders novel forms of intermediation. Uber, Lyft, Airbnb, and other on-demand services all use mobile devices and networked software to turn individual service providers into arms of centralized platforms. Internet of Things services do the same with sensor devices.²⁹⁵ When something goes wrong, it is no longer a question of design or manufacturing flaws in individual products. For example, a software glitch at the beginning of 2016 caused widespread failures of Nest network-connected adaptive thermostats in the middle of winter, leaving

290. See Sprague, *supra* note 286, at 53 (identifying control as a critical factor in distinguishing employees from independent contractors).

291. See Mike Isaac & Natasha Singer, *California Says Uber Driver Is Employee, Not a Contractor*, N.Y. TIMES (June 17, 2015), <http://www.nytimes.com/2015/06/18/business/uber-contests-california-labor-ruling-that-says-drivers-should-be-employees.html>; Carrie Mihalcik, *Lyft Pays \$12M to Settle Class Action Suit with California Drivers*, CNET (Jan. 27, 2016, 2:07 PM), <http://www.cnet.com/news/lyft-pays-12m-to-settle-class-action-suit-with-california-drivers/>; James Surowiecki, *Gigs with Benefits*, NEW YORKER (July 6, 2015), <http://www.newyorker.com/magazine/2015/07/06/gigs-with-benefits>.

292. See O'Connor v. Uber Techs., Inc., 82 F. Supp. 3d 1133, 1135 (N.D. Cal. 2015); see also Joel Rosenblatt, *Uber Loses Bid to Pause Drivers Group Lawsuit as Trial Looms*, BLOOMBERG: TECH (Jan. 27, 2016, 3:02 PM), <http://www.bloomberg.com/news/articles/2016-01-27/uber-loses-bid-to-pause-california-drivers-group-lawsuit> (noting that Uber failed to halt proceedings while it appeals a decision expanding the size of the class).

293. See Isaac & Singer, *supra* note 291.

294. See, e.g., Sprague, *supra* note 286, at 72–76 (advocating a new test based on whether the on-demand platforms depend on the workers, rather than the reverse); Justin Fox, *Uber and the Not-Quite-Independent Contractor*, BLOOMBERG: VIEW (June 23, 2015, 11:59 AM), <http://www.bloombergview.com/articles/2015-06-23/uber-drivers-are-neither-employees-nor-contractors>; Lauren Weber, *What If There Were a New Type of Worker? Dependent Contractor*, WALL ST. J. (Jan. 28, 2015, 10:28 AM), <http://www.wsj.com/articles/what-if-there-were-a-new-type-of-worker-dependent-contractor-1422405831>.

295. See *supra* Part I.

owners worried about the effects of freezing houses on small children and pipes.²⁹⁶ Software vendors such as Microsoft have successfully avoided liability for defects and security flaws, based on contractual disclaimers and limitations on liability,²⁹⁷ but the Internet of the World potentially turns everything into a software system.

3. The Safe Harbors of Sections 230 and 512

As with the other current legal and regulatory debates, there is a handy precedent in the annals of cyberlaw. In the Congressional compromise to incorporate the CDA into the bicameral version of the Telecommunications Act of 1996,²⁹⁸ Congress paired the provisions imposing liability for online indecency and obscenity with provisions protecting online intermediaries.²⁹⁹ The latter language, codified as Section 230 of Title 47 of the U.S. Code, includes two main elements. The first recites a Congressional desire to preserve the unregulated Internet.³⁰⁰ This language, unmoored from its companion provisions on indecency, has been cited ever since in support of non-regulatory positions toward online services.³⁰¹

The second component of Section 230 is the safe harbor regime. Online intermediaries are not considered publishers or speakers of information provided on their services by other content providers, including individuals.³⁰² Section 230 protects them against liability for taking good faith efforts to block inappropriate or harmful material, which otherwise might be seen as evidence they can exercise editorial control.³⁰³ By immunizing intermediaries for such “good Samaritan” actions, the law facilitated dialogue between these providers and those seeking removal of materials. The unanimous Supreme Court decision in *Reno v. ACLU* struck the substantive provisions of the CDA restricting indecent online speech.³⁰⁴ However, Section 230 remained good law.

296. See Nick Bilton, *Nest Thermostat Glitch Leaves Users in the Cold*, N.Y. TIMES (Jan. 13, 2016), <http://www.nytimes.com/2016/01/14/fashion/nest-thermostat-glitch-battery-dies-software-freeze.html>.

297. See 68 AM. JUR. 3D *Proof of Facts* § 5, Westlaw (database updated Feb. 2017); Michael D. Scott, *Tort Liability for Vendors of Insecure Software: Has the Time Finally Come?*, 67 MD. L. REV. 425, 436–38 (2008).

298. Communications Decency Act of 1996, Pub. L. No. 104-104, § 502, 110 Stat. 133, 134–35 (codified as amended at 47 U.S.C. § 223 (2012)).

299. See Werbach, *Off the Hook*, *supra* note 196, at 556–57 & n.131.

300. 47 U.S.C. § 230(a)–(b).

301. See Werbach, *Off the Hook*, *supra* note 196, at 554–55.

302. 47 U.S.C. § 230(c)–(d).

303. *Id.*

304. 521 U.S. 844, 849, 883 (1997).

Section 230 expressly does not apply to copyright violations.³⁰⁵ However, Congress created a similar safe harbor structure under Section 512 of the Digital Millennium Copyright Act.³⁰⁶ There, providers enjoy a safe harbor from liability for content provided by others so long as they designate an agent to receive complaints about copyright infringement, take down infringing material when notified, and offer subscribers the opportunity for a counter-notification if material was taken down in error.³⁰⁷

These safe harbor provisions resulted from compromises between those worried about letting intermediaries off the hook for enabling distribution of harmful or infringing material and those worried about chilling effects to legitimate speech and commerce.³⁰⁸ Neither side got exactly what it wanted, especially in the copyright context, but the arrangements were important foundations for the subsequent growth of online services and e-commerce.

In the years since 1996, the Section 230 safe harbor has become a significant protector of online intermediaries against a raft of legal claims based on the actions of their users. Although not without its critics,³⁰⁹ Section 230 has been labeled one of the most important legislative enactments facilitating the growth of online services and e-commerce.³¹⁰ Parties have challenged its invocation in hundreds of cases, and while courts have not always been consistent, the safe harbor has been an effective shield against an extraordinarily broad array of claims.³¹¹

305. 47 U.S.C. § 230(e)(2) (2012).

306. Pub. L. No. 105-304, § 202, 112 Stat. 2860, 2877–78 (codified as amended at 17 U.S.C. § 512 (2012)).

307. 17 U.S.C. § 512.

308. See Jennifer M. Urban & Laura Quilter, *Efficient Process or “Chilling Effects”?* *Takedown Notices Under Section 512 of the Digital Millennium Copyright Act*, 22 SANTA CLARA COMPUTER & HIGH TECH. L.J. 621, 621–22 (2006).

309. See, e.g., Doug Lichtman & Eric Posner, *Holding Internet Service Providers Accountable*, 14 SUP. CT. ECON. REV. 221, 230 (2006) (describing how indirect liability is preferable where the potentially liable party is in a good position to detect and deter bad acts, such as in the employment context); Ronald J. Mann & Seth R. Belzley, *The Promise of Internet Intermediary Liability*, 47 WM. & MARY L. REV. 239, 250 (2005) (proposing a “mature scheme of regulation that limits the social costs of illegal Internet conduct in the most cost-effective manner”).

310. David S. Ardia, *Free Speech Savior or Shield for Scoundrels: An Empirical Study of Intermediary Immunity Under Section 230 of the Communications Decency Act*, 43 LOY. L.A. L. REV. 373, 379–80 (2010); H. Brian Holland, *In Defense of Online Intermediary Immunity: Facilitating Communities of Modified Exceptionalism*, 56 U. KAN. L. REV. 369, 369 (2008); Mark A. Lemley, *Rationalizing Internet Safe Harbors*, 6 J. ON TELECOMM. & HIGH TECH. L. 101, 102–03 (2007); see also Brief of Amici Curiae Internet Law Professors in Support of Appellees Google, Inc. et al. at 4–6, *Garcia v. Google, Inc.*, 786 F.3d 733 (9th Cir. 2015) (No. 12-57302).

311. See Ardia, *supra* note 310, at 411, 414.

Section 230 covers interactive computer services, which “provide[] or enable[] computer access by multiple users to a computer server, including specifically . . . access to the Internet.”³¹² It protects internet service providers and all manner of online content and application services, but not services delivered in the physical world.³¹³ The question is therefore what should be learned from the historical experience, and how government should craft an intermediary liability or safe harbor regime for the new generation of platforms.

4. Defining Platform Responsibilities

Intermediaries are often the best, if not the only, entities able to police behavior of participants in their network. Only they have visibility across the ecosystem and real-time data on activities of all participants.³¹⁴ Platform providers may be the only entities capable of taking effective enforcement action against those who cause injuries, or they may be the only actor involved with sufficient resources to compensate the injured. The threat of liability creates a strong incentive for platforms to screen participants and take action against those who cause harm.³¹⁵

On the other hand, excessive liability risk can prevent providers from offering valuable services or create perverse incentives. Congress designed the Section 230 safe harbor to address the concern that an intermediary would avoid policing activity out of fear that it would become liable as a publisher for exercising editorial control.³¹⁶ Congress drafted the safe harbor provisions of the 1990s, especially the Section 512 notice and takedown language for copyright infringement, to balance these concerns.³¹⁷ The legal regime shapes business models as much as it allocates responsibilities for compensation.³¹⁸

312. 47 U.S.C. § 230(f)(2) (2012).

313. Airbnb has asserted that it falls within the Section 230 safe harbor, although this claim has not been tested. See Brittany McNamara, *Airbnb: A Not-So-Safe Resting Place*, 13 COLO. TECH. L.J. 149, 164 (2015) (noting that Section 230 is one of the most influential reasons why Airbnb can succeed); see also Lisa Fickenscher, *Hotels Girding for a Fight Against Airbnb*, CRAIN’S N.Y. BUS. (Aug. 19, 2013, 5:00 AM), http://www.crainsnewyork.com/article/20130819/HOSPITALITY_TOURISM/130819909/hotels-girding-for-a-fight-against-airbnb (explaining that regulatory authorities have hesitated to sue Airbnb because of the Section 230 safe harbor).

314. See Ardia, *supra* note 310, at 377 (“[P]rivate intermediaries transport, host, and index tens of billions of pages of content online.”).

315. Macmurdo, *supra* note 267, at 326.

316. See *Zeran v. Am. Online, Inc.*, 129 F.3d 327, 331 (4th Cir. 1997); Ardia, *supra* note 310, at 410 (stating that one purpose of the amendment that became the Section 230 safe harbor was “encouraging private efforts to deal with Internet indecency”).

317. See Ardia, *supra* note 310, at 391 n.66.

318. The pattern continues to this day. For example, the anonymous location-based messaging service YikYak, created in late 2013, has provoked controversy on many college campuses due to abusive and threatening messages. Thanks to Section 230, it has not been held

Something similar could help to align incentives for networked businesses of the new internet economy to take appropriate responsibility as intermediaries, without burdening them with excessive liability.³¹⁹ As with the other issues, the question should be how to ensure appropriate protection for customers in the most efficient and effective way, while still supporting innovation and growth of new services.

When pressed, on-demand providers have been willing to step in with creative solutions. Following the 2011 incident, Airbnb began offering a \$1 million “Protection Guarantee” for its hosts.³²⁰ This amount is in addition to renters’ or homeowners’ insurance, which sometimes does not apply when hosts rent out space to third parties.³²¹ In India, Uber introduced a “panic button” for riders to address concerns about sexual assaults by drivers.³²²

Another mechanism is private insurance. On-demand service providers often only have personal insurance policies, which are not well-adapted to the commercial services they are offering.³²³ Commercial policies, however, generally are not designed for individuals acting as drivers or residential hosts on an episodic, part-time basis.³²⁴ And even when providers have insurance, the question is whether it applies any time they use the on-demand app or only when they interact with a customer.³²⁵ These limitations are gradually falling away, in part due to government action. One of the key developments allowing adoption of TNC laws has been negotiation of a compromise between ride-hailing companies and insurance companies regarding insurance requirements for drivers.³²⁶ Most states have used the resulting model language to

liable for defamatory content posted by its users, but it has been able to remove content or turn users over to law enforcement authorities in cases of serious criminal activity or physical danger. See Jonathan Mahler, *Who Spewed That Abuse? Anonymous Yik Yak App Isn't Telling*, N.Y. TIMES (Mar. 8, 2015), <http://www.nytimes.com/2015/03/09/technology/popular-yik-yak-app-confers-anonymity-and-delivers-abuse.html>.

319. See Katz, *supra* note 3, at 1106–07.

320. See *The \$1,000,000 Host Guarantee*, AIRBNB, <https://www.airbnb.com/guarantee> (last visited Mar. 28, 2017).

321. *Id.*

322. Associated Press, *Uber Introduces “Panic Button” in India*, GUARDIAN (Feb. 9, 2015, 7:08 AM), <https://www.theguardian.com/technology/2015/feb/09/uber-introduces-panic-button-in-india>.

323. See Catherine Lee Rassman, *Regulating Rideshare Without Stifling Innovation: Examining the Drivers, the Insurance “Gap,” and Why Pennsylvania Should Get on Board*, 15 PITT. J. TECH. L. & POL’Y 81, 88 (2014).

324. *Id.*

325. See *id.* This issue is known as the “insurance gap.” *Id.*

326. See Anthony R. O’Donnell, *Insurer-TNC Compromise Paves Way for Rideshare Insurance Regulation*, INS. INNOVATION REP. (Mar. 31, 2015), <http://iireporter.com/insurer-tnc-compromise-paves-way-for-rideshare-insurance-regulation>.

impose mandatory insurance requirements on drivers, and in response, insurance companies have begun to offer policies tailored to the new business model.³²⁷

The network neutrality experience shows that a substantial segment of internet users and startups may advocate rules that place greater obligations on service providers, despite their instinctive resistance to government regulation.³²⁸ Indeed, opponents of regulation for on-demand services have begun to endorse measures to protect workers and consumers.³²⁹ In November 2015, founders or CEOs of several on-demand providers including Lyft, Handy, and Instacart signed onto a letter urging the creation of new social safety net mechanisms for on-demand workers.³³⁰

IV. WE CAN WORK IT OUT

The pioneers of the On-Demand Economy, Internet of Things, and Big Data face a similar challenge to Napster and YouTube. Those that think they can ignore or challenge existing laws indefinitely may find themselves in jeopardy. Those that find ways to align interests will succeed. Yet at the same time, policymakers who think they can simply extend old rules to new services will encounter both legal and practical difficulties. Once government is at the table and both sides come forward with good faith, together they can and will develop creative solutions.

A. *The Digital Dichotomy*

In 1999, writer Andrew Shapiro published *The Control Revolution*, a perceptive examination of the tensions between the decentralizing power of the internet and the centralizing pressures of legal and business forces.³³¹ Shapiro's thesis was that the rise of online activity would

327. See, e.g., *California Commissioner OKs New Insurance Products to Fill Ridesharing Gap*, INS. J. (Jan. 21, 2016), <http://www.insurancejournal.com/news/west/2016/01/21/395994.htm> (describing how USAA and State Farm recently introduced gap-closing insurance to Uber and Lyft drivers in California).

328. See *supra* Subsection II.C.3.

329. Arun Sundararajan, *A Safety Net Fit for the Sharing Economy*, FIN. TIMES (June 22, 2015, 6:07 PM), <https://pdfs.semanticscholar.org/4af5/d34faa19590cfdb4ba127e7b5da84e2e736a.pdf>.

330. See Agence France Press, "*Sharing Economy*" Firms Urge Safety Net for Workers, YAHOO! NEWS (Nov. 10, 2015), <https://www.yahoo.com/news/sharing-economy-firms-urge-safety-net-workers-162802278.html>.

331. See generally ANDREW L. SHAPIRO, *THE CONTROL REVOLUTION* (1999) (arguing that there has been a shift of control due to society's ever-increasing use of the internet). This finding reflects deeper structures of networked activities. A similar pattern of alternating centralization and decentralization explains the development of the infrastructure of the internet, which network

produce a zig-zag path of development.³³² Explosions of bottom-up innovation would provoke excessive regulation, which in turn birthed new efforts to circumvent legal and other constraints.³³³ Both the upstarts and the establishment, Shapiro argued, were susceptible to “oversteer,” a tendency to over-correct for legitimate problems.³³⁴ Both sides would eventually move to the middle as they recognized the need for balance, although the process of getting there might be costly.³³⁵

The internet’s development in the twenty-first century has played out largely as Shapiro predicted. From Napster to PayPal to YouTube to Skype to Facebook, the great innovative business success stories involved waves of hype about unstoppable disruption alternating with periods of backlash about threats to individuals and well-functioning markets.³³⁶ Like a pendulum gradually narrowing its arc, extreme libertarianism and regulatory revanchism gradually gave way to practical solutions in the middle.³³⁷ This story describes the website-dominated era of Web 1.0 as well as the social/mobile/app world of Web 2.0. There is every reason to expect the pattern to continue.

The problems described in *The Control Revolution* can be traced to a core misunderstanding: the digital dichotomy.³³⁸ The starting point of this way of thinking is that online transactions or connections are ontologically different than interactions in the “real world.”³³⁹ To this perspective, e-commerce is distinct from brick-and-mortar commerce, and online social networks are distinct from in-person interaction.

When it comes to law and regulation, the digital dichotomy suggests that virtual and physical interactions belong in distinct categories. This in turn forces scholars, government officials, and industry leaders to argue about what goes on either side of the line and what consequences flow

science can explain. See Kevin Werbach, *The Centripetal Network: How the Internet Holds Itself Together, and the Forces Tearing It Apart*, 42 U.C. DAVIS L. REV. 343, 346 (2008).

332. See SHAPIRO, *supra* note 331, at xiii.

333. See *id.* at xiii–iv.

334. See *id.* at xiii–xiv.

335. See *id.* at xiv.

336. See *supra* Section III.A.

337. See *supra* Section III.A.

338. Others have used this term in unrelated ways, both in legal analysis and to describe business developments. See, e.g., *Competition in the Evolving Digital Marketplace: Hearing Before the Subcomm. on Courts and Competition Policy of the H. Comm. on the Judiciary*, 111th Cong. 39 (2010) (testimony of Scott Cleland, President, Precursor LLP) (using the term digital dichotomy to discuss how the internet, unlike traditional business, has moved away from competition to monopoly as opposed to the other way around).

339. Professor Orin Kerr makes a related point about the confusion between the internet as a virtual space and as a physical network. See Orin S. Kerr, *The Problem of Perspective in Internet Law*, 91 GEO. L.J. 357, 357 (2003).

from that determination.³⁴⁰ Established rules were written for the old world of physical activities, so the new online analogues appear to exist in a legal vacuum. The policy debate becomes a fight over whether they should be either “regulated” (under the old rules) or “unregulated,”³⁴¹ despite the problems of such artificially sharp divisions.³⁴² The question becomes which of those outcomes one fears the most.

The fact that online businesses are new and operate in the ephemeral world of the internet blinds us to the ways that the behaviors and market structures involved are familiar. This, in turn, delays the inevitable recognition that the desirable outcome is a balanced solution that addresses the legitimate interests of industry, governments, and individuals. As cyberspace mediates more and more domains of human activity, the pattern repeats itself. Decades into the internet revolution, new business functions and social patterns are still making their way online.

The emerging Internet of the World represents the final destruction of artificial divisions between the real and the virtual. Physical entities become extensions or information feeds for digital processors. The internet changes the delivery of services, even though those services occur entirely in the physical world. And it is no longer just large, centralized workforces such as Amazon’s warehouse employees who provide these digitally-mediated services; it can be individuals working part time on their own hours, enabled through online marketplaces.

Where before it was possible to talk of a “brick and mortar” hotel chain such as Hilton competing against a purely digital aggregator such as Expedia, it becomes much harder to classify the ecosystem around Airbnb. Many of the advantages previously reserved for digital goods such as iTunes’ songs or Netflix’s movies are now available to physical goods and local services provided by humans. At some point, there is virtually no asset in a growing number of categories that cannot be

340. I have made a similar point about the siloed structure of telecommunications regulation in an earlier paper. See Kevin Werbach, *A Layered Model for Internet Policy*, 1 J. ON TELECOMM. & HIGH TECH. L. 37, 40–44 (2002).

341. See Oxman, *supra* note 156, at 3 (arguing for continued internet deregulation).

342. See Kevin Werbach, *The Network Utility*, 60 DUKE L.J. 1761, 1764 (2010) (discussing problems arising from the FCC’s “all or nothing” approach to applying communications regulation to internet-based services); see generally Adam J. Kolber, *Smooth and Bumpy Laws*, 102 CALIF. L. REV. 655 (2014) (describing difficulties when laws create all-or-nothing distinctions). Not all cyberlaw scholarship operates in such Manichean terms. Lawrence Lessig’s seminal book, *Code*, for example, describes four forces that regulate behavior: law, norms, the market, and architecture. See LAWRENCE LESSIG, *CODE* 86–89 (1999). While cyberspace differs from the physical world because of the prevalence of code regulation (the cyber equivalent of architecture), his point is not that one form of regulation is good and the others are bad; all forms of regulation have their place. *Id.*

delivered on demand through digital systems. And in response, established businesses are turning over new digital leaves. Successful brick-and-mortar retailers such as Wal-Mart have long depended on advanced logistics, customer analytics, and other data-driven software systems.³⁴³ Now, in the face of the On-Demand Economy rippling through the transportation sector, even companies as decisively traditionally rooted in the physical world as Ford and General Motors are positioning themselves as software-driven “smart mobility” providers.³⁴⁴

The fact that on-demand services so thoroughly bridge the physical and the digital is what generates so much confusion and controversy in the area of regulation. The idea that digital systems are strange and new and different leads to the notion that they can escape the gravitational forces of established legal regimes.³⁴⁵ That same mental model leads others to see these services as threatening, unfamiliar, and directed toward undermining important public policy protections. Both idealists and realists assume that established legal and regulatory institutions can remain intact: The new services either ignore them or comply with them.³⁴⁶ Time and time again, the real outcome has involved engagement and evolution on both sides.³⁴⁷

The oft-repeated mantra that law and regulation move more slowly than technology should not be the end of the discussion. Both sides of the equation can be examined more closely. The practical effects of technological change are felt over a period of time, as the technology diffuses and broader segments of society adopt it.³⁴⁸ More importantly,

343. See Karl Flinders, *Walmart's Strong IT Will Be Key in Strategic Shift*, COMPUTERWEEKLY.COM (Jan. 11, 2010, 2:29 PM), <http://www.computerweekly.com/news/1280091811/Walmarts-strong-IT-will-be-key-in-strategic-shift> (“Walmart runs some of the most advanced systems of any company in the world . . .”).

344. See Steven Levy, *Bill Ford Isn't Scared of Apple*, BACKCHANNEL (Jan. 10, 2016), <https://backchannel.com/bill-ford-isn-t-scared-of-apple-9822fd3ecb78#6r0o86f68>; see, e.g., Mike Isaac, *General Motors, Gazing at Future, Invests \$500 Million in Lyft*, N.Y. TIMES (Jan. 4, 2016), http://www.nytimes.com/2016/01/05/technology/gm-invests-in-lyft.html?_r=0 (discussing GM's investment in Lyft and their plan to develop short-term car rental hubs across the United States).

345. Even John Perry Barlow, the avatar of an independent realm of cyberspace, now recognizes that his *Declaration* drew too sharp a dividing line between the real and the virtual: “If I were writing it today, I would make it much more clear that the Internet and the physical world are deeply connected in the same way that the mind and body are connected.” John Perry Barlow (john_perry_barlow), REDDIT (Feb. 8, 2016), https://www.reddit.com/r/IAMa/comments/44srf4/im_john_perry_barlow_cofounder_of_eff_and_freedom/.

346. See Cohen & Zehngbot, *supra* note 3, at 7 (noting the difficulty regulatory institutions have when attempting to regulate sharing economy businesses).

347. See, e.g., Sofia Ranchordás, *Innovation-Friendly Regulation: The Sunset of Regulation, the Sunrise of Innovation*, 55 JURIMETRICS 201, 216 (2015).

348. See Vivek Wadhwa, *Laws and Ethics Can't Keep Pace with Technology*, MIT TECH.

regulators can design legal regimes that provide greater flexibility when addressing fast-changing environments.³⁴⁹ The celebration of innovation should not obscure the principle that law exists to protect core societal values precisely because they do not change.

B. ICANN and the Dangers of Institutional Exceptionalism

The collapse of the digital dichotomy also undermines the arguments for new institutions specially designed to encompass online activity. Even when legislatures or courts adopt distinctive rules for new technological contexts, such as the Section 230 safe harbor for online services,³⁵⁰ they still operate within traditional procedural and political boundaries. By contrast, creating new institutions from scratch opens up a Pandora's Box. The best example of the risks involved is ICANN, the Internet Corporation for Assigned Names and Numbers.

One of the remarkable aspects of the internet in the late 1990s was its emergence as a platform for massive levels of commercial activity on top of a technical governance structure largely run by volunteers and groups of engineers. In particular, a single man, computer scientist Jon Postel, who had volunteered for the job years before, oversaw the entire addressing system that ensured that information got to the right place.³⁵¹ Similarly, a small technology contractor, Network Solutions, Inc. (NSI), got the job of registering domain names with the main suffixes, through a contract with the National Science Foundation.³⁵² This largely ad hoc system eventually became untenable. Critics challenged NSI's policies, its private control over public functions, its growing profits from registration fees, and the lack of attention to technical concerns such as security and depletion of available addresses.³⁵³ Organizations and policy makers outside the United States also questioned why an American government contractor controlled such an important function for the global internet.³⁵⁴

REV. (Apr. 15, 2014), <https://www.technologyreview.com/s/526401/laws-and-ethics-cant-keep-pace-with-technology/> (discussing the effect the printing press had on Medieval and Roman society over the course of centuries).

349. See Ranchordás, *supra* note 347, at 201, 204–05 (advocating techniques such as sunset clauses and experimental legislation to overcome the “pacing problem” of law and technology).

350. 57 U.S.C. § 230 (2012).

351. See MILTON L. MUELLER, RULING THE ROOT: INTERNET GOVERNANCE AND THE TAMING OF CYBERSPACE § 5.2.1 (2002).

352. See *id.* § 5.5.2.

353. See *id.* §§ 6.2.1, 6.2.2, 7.3.1, 7.3.2.

354. See *id.* §§ 6.3.1, 6.3.2. Some domain name suffixes, such as “.uk,” are expressly national and generally controlled by authorities in that jurisdiction. *Glossary*, ICANN, <https://www.icann.org/resources/pages/glossary-2014-02-03-en#g> (last visited Mar. 17, 2017).

Unlike most of the issues discussed so far, domain name management is inherently international.³⁵⁵ Because no nation has legal authority beyond its borders absent some voluntary arrangement such as a treaty, preemption of excessive regulatory action by other governments, along the lines of the Internet Tax Freedom Act,³⁵⁶ was not an option. The United States or other countries and private actors committed to the openness of cyberspace could not simply prohibit nations from interfering. Instead, they concluded, a new institution had to be constructed.³⁵⁷

In 1998, the Internet Society, a non-profit technical organization, joined forces with several other groups as well as the International Telecommunications Union (ITU) and the World Intellectual Property Organization (WIPO), to adopt a memorandum of understanding (MOU) for management of internet addressing.³⁵⁸ On the one hand, the MOU, whose eighty signatories were predominantly private organizations, was an effort in the cyberlibertarian vein to remove online activities from the realm of territorial governments.³⁵⁹ On the other hand, because it created new organizations formally attached to the ITU and WIPO, both of which are treaty organizations comprised of nation-states, U.S. officials criticized the MOU for giving too much power to governments.³⁶⁰ While the United States had refrained from using its stewardship over internet addressing to impose content restrictions or other regulations on the internet, other governments might not be so hesitant.

In response, the United States rejected the MOU and began a process that eventually resulted in transfer of management over the domain name system and other technical aspects of internet governance to a newly-created organization called the Internet Corporation for Assigned Names and Numbers (ICANN).³⁶¹ ICANN is formally incorporated as a private California non-profit corporation, but it has a complicated governance structure that includes representation from various stakeholder groups as

However, generic top-level domains (gTLDs) such as “.com” have no specific geographical designation. *Id.*

355. MUELLER, *supra* note 351, § 8.1.1.

356. Pub. L. No. 105-277, 112 Stat. 2681, 2681–2719 (1998) (codified at 47 U.S.C. § 151 (2012)).

357. MUELLER, *supra* note 351, § 8.1.3.

358. See Press Release, Int’l Telecomm. Union, Changes to Internet Domain Names Will Encourage Competition, Foster Growth and Stability (Apr. 29, 1997), http://www.itu.int/newsarchive/press_releases/1997/itu-07.html.

359. See GOLDSMITH & WU, *supra* note 102, at 36–43.

360. See *The Internet Domain Name System (Part I): Hearing Before the Subcomm. on Basic Research of the House Comm. on Sci.*, 105th Cong. 10–11 (1997) (testimony of Larry Irving, Assistant Secretary of Commerce for Communications and Information).

361. See MUELLER, *supra* note 351, §§ 10.1–10.2.

well as national governments.³⁶² The U.S. Department of Commerce, which succeeded the National Science Foundation, controls the critical contract with ICANN for management of the “root server” that all other name servers on the internet ultimately look to for valid addresses.³⁶³ Yet even though ICANN was a creation of the United States and depended on a government contract, the United States structured and promoted it as an exercise in internet self-governance.³⁶⁴

ICANN thus represents the worst aspects of cyberlibertarianism and cyber-realism. It views itself in aspirational terms as an independent collective voice of the will of the people of cyberspace.³⁶⁵ Yet it also represents a naked exercise of power politics by the United States, which in turn sought to head off intervention from other governments.³⁶⁶ The result is an institution that lacks accountability and has lurched from controversy to controversy.³⁶⁷

Despite its frequent protestations that it is purely a technical management organization, ICANN has relentlessly grown its staff, budget, and scope of authority.³⁶⁸ Several times, there have been efforts to reconstitute or replace ICANN with an organization under the United Nations, or otherwise led by governmental representatives, who have only an advisory role in the current system.³⁶⁹ Various initiatives such as the World Summit on the Information Society, Internet Governance Forum, NetMundial, and World Internet Conference have advocated a largely government-dominated vision of internet governance in response to ICANN’s U.S.-centricity.

Most American technology companies opposed the efforts to decouple ICANN from its special relationship to the U.S. government. Their concern was that other countries with weaker protections for free expression could use a government-controlled ICANN to push for limitations on the free flow of information online. At the same time, direct interventions by the United States, as when it forced ICANN to delay

362. *Id.* § 8 tbl.8.1.

363. *See id.* § 9.4.

364. *See* Milton Mueller, *ICANN and Internet Governance: Sorting Through the Debris of “Self-Regulation,”* 1 INFO 497, 498 (1999).

365. *Id.*

366. *Id.*

367. *See id.*; A. Michael Froomkin, *Wrong Turn in Cyberspace: Using ICANN to Route Around the APA and the Constitution*, 50 DUKE L.J. 17, 29 (2000); John Palfrey, *The End of the Experiment: How ICANN’s Foray into Global Internet Democracy Failed*, 17 HARV. J.L. & TECH. 409, 429, 460 (2004); Jonathan Weinberg, *ICANN and the Problem of Legitimacy*, 50 DUKE L.J. 187, 210 (2000).

368. *See* Palfrey, *supra* note 367, at 464.

369. *See* LAURA DENARDIS, *THE GLOBAL WAR FOR INTERNET GOVERNANCE* 227–29 (2014); MILTON L. MUELLER, *NETWORKS AND STATES* 248–50 (2010).

plans for a dot-XXX top-level domain for pornographic material,³⁷⁰ continue to rankle those who envision a self-governing or truly global institution. The U.S. government is currently attempting to disengage from ICANN, though it faces arguments that it should continue this guardian role.³⁷¹

ICANN's most significant recent initiative is the unveiling of a variety of new generic top-level domains.³⁷² The ponderous eight-year process involved forty-seven requests for comment,³⁷³ despite little evidence of real demand.³⁷⁴ Companies were required to pay a non-refundable \$185,000 deposit to reserve new domains and substantial ongoing fees for those approved. The process as a whole generated tens of millions of dollars for the ICANN treasury but few clear benefits for internet users.³⁷⁵

ICANN illustrates what happens when too much credence is given to calls for new institutions and insufficient attention is paid to the potentially constructive role of old-fashioned government agencies in providing oversight, ensuring procedural safeguards, and playing a convening role for resolution of disputes. If the strategic purpose of ICANN was, like the Internet Tax Freedom Act, to employ the power of the U.S. government as a firewall against intrusive actions by other governments, it has at most served to delay and channel those efforts. If it was to demonstrate the potential of internet self-governance, it surely failed.³⁷⁶

An alternative to the ICANN approach of creating a new institution for innovative online activity is to enable private governance activity under the umbrella of public regulatory oversight. There are several

370. See Jonathan Weinberg, *Governments, Privatization, and "Privatization:" ICANN and the GAC*, 18 MICH. TELECOMM. & TECH. REV. 189, 201-07 (2011).

371. See Alina Selyukh, *Internet Experts Submit Draft Plan for U.S. to Cede Domain Oversight*, REUTERS (Aug. 3, 2015, 3:24 pm), <http://www.reuters.com/article/2015/08/03/usa-internet-icann-idUSL1N10E0ZZ20150803>.

372. See Press Release, Internet Corp. for Assigned Names & Numbers, *Internet Domain Name Expansion Now Underway* (Oct. 23, 2013), <https://www.icann.org/resources/press-material/release-2013-10-23-en>.

373. See Daniela Michele Spencer, Note, *Much Ado About Nothing: ICANN's New gTLDs*, 29 BERKELEY TECH. L.J. 865, 865 (2014).

374. See MICHAEL L. KATZ ET AL., ICANN, ECONOMIC CONSIDERATIONS IN THE EXPANSION OF GENERIC TOP-LEVEL DOMAIN NAMES 12 (2010), <http://archive.icann.org/en/topics/new-gtlds/phase-two-economic-considerations-03dec10-en.pdf>.

375. See Wade Roush, *ICANN's Boondoggle*, MIT TECH. REV. (Aug. 21, 2012), <https://www.technologyreview.com/s/428911/icanns-boondoggle/>.

376. To be fair, ICANN involved international activity, over which the U.S. government could not simply assert its authority and be done. See BERIN SZOKA ET AL., *TECH FREEDOM, ICANN TRANSITION IS PREMATURE* (2016), http://docs.techfreedom.org/TF_White_Paper_IANA_Transition.pdf. The problem was the assumption that the new institution could create its own rules, without a strong initial oversight process and clearly-defined safeguards.

variants of self-regulation, co-regulation, and delegated regulation that free private actors from the inefficiencies of direct government mandates while still ensuring that public interest obligations are met.³⁷⁷ These approaches involve an active role for government, especially at the initial stages, in defining essential conditions and parameters, while giving market participants flexibility in the technological solutions they choose to meet them.

Both in the dot-com era and more recently, established governance and regulatory mechanisms have proven sufficiently adaptable to address new issues raised by innovative, fast-growing startups. Working through the issues for on-demand services will be challenging. The need for new flexibility and new rules should not, however, be equated with the inherent superiority of new legal institutions. Existing regulators, such as local taxi commissions, may be obstinate and captured by incumbents, but they are subject to procedural protections and political influences that may correct for such flaws. The way that Uber, Lyft, and Airbnb have gradually reached accommodations through local negotiations and state preemptive legislation suggests these factors can be influential when the startups are willing to come to the table.

C. *What Cyberlaw Should Teach*

Although cyberlibertarianism and anti-libertarian realism were major threads in early cyberlaw scholarship, they were not the only viewpoints, especially after the turn of the millennium. Another group of scholars, growing more prominent over time, offered more nuanced accounts that rejected the duality of cyberspace and real space, yet retained aspects of cyber-exceptionalism.³⁷⁸ Underlying this perspective was an important realization: The presupposition of the digital dichotomy was false. Cyberspace and real space were no longer distinct from one another (if they ever were).

The shift in scholarship mirrored shifts in the world at large. In the early days of the commercial internet, “going online” meant going to a computer at a fixed location, initiating a connection on a dial-up modem, and loading special software to request data from remote websites. Today, users are likely to carry internet-connected devices with them in the form of smartphones, laptops, and tablets; even the fixed-location computers use “always-on” broadband connections; every major

377. See Molly Cohen & Arun Sundararajan, *Self-Regulation and Innovation in the Peer-to-Peer Sharing Economy*, 82 U. CHI. L. REV. DIALOGUE 116, 129 (2015).

378. See, e.g., James Grimmelman, *Virtual Borders: The Interdependence of Real and Virtual Worlds*, FIRST MONDAY (Feb. 6, 2006), <http://firstmonday.org/ojs/index.php/fm/article/view/1312/1232%3BLastowka>; see also Kerr, *supra* note 339, at 357 (differentiating the “internal” perspective of internet users from the “external” perspective of the operation of the network).

operating system and software application has built-in internet connections; and the line between “client” and “server” is increasingly blurred into “the cloud.” Google Maps, which with a single click changes between a computer-generated map and satellite imagery of the user’s GPS-tracked real-time location, epitomizes this fusion of virtual and real in the second-generation internet.

In such a world, it became more and more difficult to suggest that online interactions did not have substantial spill-over effects on both personal and commercial relationships in the physical world, making strong segregation of their legal regimes untenable. At the same time, it became harder and harder to treat cyberspace as illusory and disregard it by applying longstanding legal principles.

A final contextual reason for the shift in internet policy was the broader bending of the arc of regulatory views, from President Ronald Reagan’s mantra that government was the problem not the solution³⁷⁹ to President Bill Clinton and Vice President Al Gore’s efforts to reinvent government³⁸⁰ to President Barack Obama’s defense of government’s role in reducing inequality.³⁸¹ The political and intellectual climates today are more hospitable to solutions that recognize both the legitimate role of government and the legitimate criticisms of government’s flaws.

The “post-realist” thread in cyberlaw scholarship goes back to its early days but was lost in the struggle between cyberlibertarians and realists. The same year as author Andrew Shapiro published *The Control Revolution*, Professor Lessig published an article in the *Harvard Law Review* titled, *The Law of the Horse: What Cyberlaw Might Teach*.³⁸² The title referred to a debate between Lessig and Judge Frank Easterbrook, who had criticized the cyberlaw project as comparable to an effort in the nineteenth century to develop a “law of the horse.”³⁸³ There was, Judge Easterbrook argued, nothing inherently distinctive about the legal considerations for online transactions; established doctrinal frameworks such as contracts and torts would do.³⁸⁴ It was misleading to focus on the technological aspects in legal analysis, in his view.

In his article, Lessig defended cyberlaw with an early version of the arguments he would make more famously in his book, *Code, and Other*

379. See Charles Levine, *The Federal Government in the Year 2000: Administrative Legacies of the Reagan Years*, 46 PUB. ADMIN. REV. 195, 198–99 (1986).

380. See David Osborne, *Reinventing Government*, 16 PUB. PRODUCTIVITY & MGMT. REV. 349, 349 (1993).

381. See President Barack Obama, Remarks by the President in State of the Union Address (Jan. 20, 2015), <https://www.whitehouse.gov/the-press-office/2015/01/20/remarks-president-state-union-address-january-20-2015>.

382. Lessig, *supra* note 6.

383. Easterbrook, *supra* note 6, at 207.

384. See *id.*

Laws of Cyberspace.³⁸⁵ The digital code of software and the Internet, Lessig argued, offered an alternative regulatory system in competition with state-defined law.³⁸⁶ Standards of transparency and overreach could be applied to evaluate both.³⁸⁷ In particular cases, software code might be more or less desirable than legal code in regulating behavior.³⁸⁸ It would be wrong, however, simply to ignore the technological dimension.

Among the valuable aspects of Lessig's framework, which remains foundational even as other early cyberlaw work became a historical curiosity, is that it is not one of cyber-exceptionalism. Lessig granted Judge Easterbrook's point that digital interactions were no different than real-space ones.³⁸⁹ There was no need, as Barlow and others advocated, for government categorically to "leave cyberspace alone."³⁹⁰ Traditional legal rules should be employed where they are the most effective and socially desirable solution. In fact, by regulating activity without the transparency and opportunities for appeal built into formal legal decisions, software code was in some ways the more dangerous tool.³⁹¹ In this way, Lessig avoided the digital dichotomy.

Extending the approach of *The Law of the Horse* to the current environment, both governmental and software-based mechanisms have a role to play in resolving the growing controversies about the on-demand economy. For on-demand businesses, the question is how to ensure that public policy objectives such as rider safety and consumer protection are met without the restrictive licensing and verification procedures existing regulators employ.³⁹² Using Lessig's two criteria, the question should be which mode of regulation is most transparent and least subject to overreach.³⁹³ Transparency can be thought of as a proxy for procedural fairness: Are the decision rules subject to evaluation and critique? Overreach is a substantive criterion analogous to Shapiro's "overseer": Do the rules go farther than necessary to address the policy concern? Government regulation involves well-understood dangers, but non-governmental regulation has limitations as well.

Latter-day cyberlibertarians claim that many of the market failures that previously justified regulatory solutions can now be addressed

385. LESSIG, *supra* note 342; Lessig, *supra* note 6, at 502.

386. *See* Lessig, *supra* note 6, at 506.

387. *See id.* at 541.

388. *See id.* at 534.

389. *See id.* at 502.

390. Barlow, *supra* note 74.

391. *See id.*

392. *See* Edelman & Geradin, *supra* note 3, at 12–31 (distinguishing between protectionist restrictions on on-demand services which should be eliminated and rules addressing legitimate policy concerns such as market failures, externalities, and information asymmetries).

393. *See id.*

through technology.³⁹⁴ For example, two-sided reputation and rating systems backed by analytics can protect both consumers and workers from abuses that previously called for government mandates.³⁹⁵ There is definitely some validity to this view. However, algorithms have their limitations. Sometimes they introduce new public policy concerns. For example, Harvard computer scientist Latanya Sweeney found that algorithmically selected Google AdSense advertisements returned ads implying prior arrest records more frequently for users with stereotypically African-American than White names, even when those users had no criminal record.³⁹⁶ The algorithms were not deliberately biased, but they produced what might be considered discriminatory results.³⁹⁷ Researchers have found similar discriminatory effects in Airbnb's reputation system.³⁹⁸

The problem with reputation systems, under Lessig's criteria, is that they are opaque. Either the platform operator keeps the data private, or in the case of more sophisticated systems employing predictive analytics, the platform operator itself may not know the matching criteria that its algorithms employ. If Uber or Lyft's algorithms direct drivers to pick up White drivers more readily than African-American ones, there is no conscious decision by a human that can be subject to enforcement actions under anti-discrimination rules.³⁹⁹ In Lessig's terms, there is a transparency concern with the software-based regulatory modality, which calls into question its superiority.

The proper response in such a situation is not necessarily to go back to the traditional solutions. It is to examine ways to preserve the benefits and efficiency of company-managed algorithmic reputation systems while avoiding the transparency problems. For example, Nick Grossman of venture capital firm Union Square Ventures sees the opportunity for a "Regulation 2.0" paradigm that shifts from *ex ante* permission to *ex post* data-driven accountability.⁴⁰⁰ He proposes that regulators exempt on-

394. See Thierer et al., *supra* note 282, at 25–42.

395. See *id.*

396. See Latanya Sweeney, *Discrimination in Online Ad Delivery*, 11 *QUEUE* 1, 10–14 (2013).

397. *Id.*

398. See Edelman et al., *supra* note 57, at 8–16.

399. This is not to say that such rules are always effective for traditional taxis. By eliminating the opportunity for the driver to decide whether to pick someone up based on a visual scan of who is standing on the corner and to later deny that racial bias was involved, the algorithmic systems likely produce better results at preventing invidious discrimination. However, this should not free them from scrutiny.

400. See Nick Grossman, *White Paper: Regulation, the Internet Way*, DATA-SMART CITY SOLUTIONS (Apr. 8, 2015), <http://datasmart.ash.harvard.edu/news/article/white-paper-regulation-the-internet-way-660>.

demand companies from certain regulations if on-demand companies provide a real-time data feed that demonstrates their compliance with public policy mandates and the opportunity for regulators to audit their behavior.⁴⁰¹

Uber, Lyft, and Airbnb initially resisted requests for granular data that could assist regulators.⁴⁰² Yet they have begun to change their tune as they recognize that voluntary disclosure may be superior to (and potentially head off) direct regulation. Airbnb has begun sharing anonymized data about its hosts with local regulators,⁴⁰³ and Uber makes trip data available to cities.⁴⁰⁴ This real-time information would also enable cities to engage in more sophisticated traffic management and other public services, as a side benefit of the regulatory deal.⁴⁰⁵ By seeing benefits in engagement with on-demand companies, local governments may be able to develop “win-win” solutions.⁴⁰⁶ Transparency can be addressed less intrusively through audits and reverse engineering of outputs on test data sets.⁴⁰⁷

A regulatory regime based on transparency of activity data is likely to be transparent as to its obligations (which is the sense in which Lessig used the term), as well as well-calibrated in its obligations. Data-sharing

401. See Nick Grossman, *Here's the Solution to the Uber and Airbnb Problems—and No One Will Like It*, SLOW HUNCH (July 23, 2015), <http://www.nickgrossman.is/2015/07/23/heres-the-solution-to-the-uber-and-airbnb-problems-and-no-one-will-like-it/>.

402. See Aaron Bialick, *Lyft and Uber Won't Release Data to Shed Light on How They Affect Traffic*, STREETS BLOG SF (June 30, 2015), <http://sf.streetsblog.org/2015/06/30/lyft-and-uber-wont-release-data-to-shed-light-on-how-they-affect-traffic/>; Kim-Mai Cutler, *Airbnb and the Problem of Data*, TECH CRUNCH (June 11, 2015), <http://techcrunch.com/2015/06/11/airbnb-and-the-problem-of-data/>.

403. See Isaac, *supra* note 201.

404. See Douglas Macmillan, *Uber Offers Trip Data to Cities, Starting with Boston*, WALL ST. J. (Jan. 13, 2015, 6:00 AM), <http://blogs.wsj.com/digits/2015/01/13/uber-offers-trip-data-to-cities-starting-in-boston/>. Uber's willingness to share data has not yet been universal. In California, for example, it was fined for failure to meet mandates for data reporting. See David Pierson, *Uber Fined \$7.6 Million by California Utilities Commission*, L.A. TIMES (Jan. 14, 2016, 11:35 AM), <http://www.latimes.com/business/la-fi-tn-uber-puc-20160114-story.html>.

405. Business professor Arun Sundararajan and a colleague have called for a somewhat similar process of “delegated regulation.” See Cohen & Sundararajan, *supra* note 377, at 129; see also Emily Badger, *What Happens When Uber and Airbnb Become Their Own Regulators*, WASH. POST (Feb. 4, 2015), <https://www.washingtonpost.com/news/wonk/wp/2015/02/04/what-happens-when-uber-and-airbnb-become-their-own-regulators/>.

406. See Daniel E. Rauch & David Schleicher, *Like Uber, but for Local Government Policy: The Future of Local Regulation of the “Sharing Economy,”* 55 (George Mason Law & Econ., Research Paper No. 15-01 (2015)), <http://ssrn.com/abstract=2549919>.

407. See Christian Sandvig et al., *Auditing Algorithms: Research Methods for Detecting Discrimination on Internet Platforms, Data and Discrimination: Converting Critical Concerns into Productive Inquiry* 6 (May 22, 2014) (unpublished manuscript) (on file with the University of Michigan); Nicholas Diakopoulos, *Rage Against the Algorithms*, ATLANTIC (Oct. 3, 2013), <https://www.theatlantic.com/technology/archive/2013/10/rage-against-the-algorithms/280255/>.

alone is not a complete solution to the range of legal issues the Internet of the World generates. Its effectiveness should be judged in each context based on effectiveness in achieving well-articulated public interest objectives. The point is that there are more options than new companies ignoring regulation and regulators blocking their operations. Both sides of that debate are under the illusion of the digital dichotomy. Instead, regulators need to define essential goals through open processes and scrutinize new technologically driven means to achieve them. Even when these regulatory innovations involve significant private action, government involvement is often necessary.

Twenty years ago, innovative new online services provoked a wave of cyberlibertarianism, a backlash of cyber-realism, and eventual adoption of creative solutions with government actors playing enabling roles. Technology entrepreneurs and their supporters eventually realized that government was not only a potential impediment to growth and innovation but a necessary facilitator of it. The same pattern is occurring now. Cooperation between governmental and private actors is starting to lead to workable compromises to address the important legal and regulatory challenges of the nascent Internet of the World. As much as digital technology changes the world, some things will always remain the same.

