

Virtual Reality Exceptionalism

Gilad Yadin*

ABSTRACT

Virtual reality is here. In just a few years, the technology moved from science fiction to the Internet, from specialized research facilities to living rooms. These new virtual reality environments are connected, collaborative, and social—built to deliver a subjective psychological effect that believably simulates spatial physical reality. Cognitive research shows that this effect is powerful enough that virtual reality users act and interact in ways that mirror real-world social and moral norms and behavior.

Contemporary cyberlaw theory is largely based on the notion that cyberspace is exceptional enough to warrant its own specific rules. This premise, a descendant of early cyberspace exceptionalism, may be dramatically undermined by the advent of virtual reality. This technology brings cyberspace conceptually and concretely close to the real world, blurring legally significant distinctions between cyberspace behavior and physical behavior, between “real,” “not real,” and “virtually real.”

There is an opportunity here. Some of the cyberspace-specific legal regimes that developed over the last twenty years are seriously flawed, especially in criminal law contexts. Computer-hacking legislation is overly broad and vague, resulting in the criminalization of minor Internet infractions and the chilling of digital freedoms; cyberharassment and cyberstalking laws are poorly enforced and ineffective, turning cyberspace into a hostile environment for many people; and government cybersurveillance norms have seriously upset

* Research Fellow, Haifa Center for Law & Technology and Ph.D. candidate, University of Haifa Faculty of Law, former research and development group manager at a top cybersecurity firm, and cybercrime and privacy legislation consultant at the Israel Ministry of Justice. I would like to thank Tal Zarsky for his guidance, The Center for Cyber Law and Policy at Haifa University and the Minerva Center for the Rule of Law Under Extreme Conditions for their support of this research, and the members of the *Vanderbilt Journal of Entertainment & Technology Law* editorial board for their diligence. Email: gilad@yadin.com.

the balance between public security and individual privacy, putting society on the path to an Orwellian surveillance state.

Virtual reality brings a new understanding of the human cyberspace behavior continuum that counteracts cyberspace exceptionalism, undermines contemporary cyberlaw theory, and presents an opportunity to move away from problematic cyberspace-specific legal regimes and back towards the well-established laws of the real world.

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I. INTRODUCTION

In the classic *Alice's Adventures in Wonderland*, the protagonist dreams of falling down a rabbit hole to an alternate reality.¹ In Wonderland, the rules of the real world do not apply; Alice moves between areas governed by anarchy, mock etiquette, and absurdist absolute sovereignty.² For some legal scholars in the 1990s, cyberspace seemed as separate from the real world as Wonderland, a realm with its own specific norms and practices beyond existing laws and governments.³ This vision of extreme cyberspace exceptionalism did not stand the test of time, but the basic notion that cyberspace is exceptional enough to warrant its own rules persisted in a different form.⁴

Contemporary cyberlaw theory is mostly based on a moderate model of cyberspace exceptionalism. An implicit belief that cyberspace is exceptional, even if not disconnected from reality, underlies the work of most current legal scholars and facilitates the development of cyberspace-specific norms and practices.⁵ Thus, many online behaviors today are subject to laws that were developed within the past twenty years and enacted specifically for cyberspace. Some of these cyberspace-specific legal regimes—especially in areas of criminal law—are flawed, ineffective, or problematic. For example, the laws governing computer hacking are overly broad and vague, resulting in the criminalization of minor Internet infractions and the chilling of digital freedoms; cyberharassment and cyberstalking legislation is poorly enforced and ineffective, turning cyberspace into a hostile environment for many people; and government cybersurveillance norms have seriously upset the balance between public security and individual privacy, putting society on the path to an Orwellian surveillance state.⁶

Now, the dynamic technological landscape presents an opportunity to undo some problematic legal changes. In just a few years, virtual reality technology moved from science fiction to the

1. LEWIS CARROLL, *ALICE'S ADVENTURES IN WONDERLAND* (VolumeOne Publ'g 1998) (1865).

2. See, e.g., Mary Liston, *The Rule of Law Through the Looking Glass*, 21 *LAW & LITERATURE* 42, 46 (2009).

3. In a 1996 talk, David Post referred to cyberspace as a “technological wonderland.” David G. Post, Visiting Assoc. Professor of Law, Georgetown Univ. Law Ctr., Jefferson Ascendant (1996), www.temple.edu/lawschool/dpost/X0011_JEFFHAM.html [<https://perma.cc/BUS3-QAF9>]; see also *infra* Part II.B.

4. See *infra* Part II.C.

5. See *infra* Part II.D.

6. See *infra* Part III.

Internet, from specialized research facilities to living rooms. Technology corporations are investing billions in virtual reality devices, software, and content. The new virtual reality environments are connected, collaborative, and social.⁷ Virtual reality is built to deliver a subjective psychological effect that believably simulates spatial and social physical reality. Cognitive research shows that this effect is powerful enough for virtual reality users to act and interact in ways that mirror real-world social and moral norms and behavior.⁸ What does the emergence of virtual reality mean for cyberlaw? Legal scholarship has begun to carefully consider the positive and normative implications of virtual reality technology but so far has missed its potential dramatic impact on the theoretical exceptionalistic foundation of cyberlaw.

Cyberspace is perceived in metaphorical spatial and social terms, a perception which—though arguably misleading to judges and lawmakers—is a natural way of understanding an intangible, complex technological concept.⁹ This metaphorical perception parallels the subjective characteristics of virtual reality. Philosophers of technology theorize that cyberspace and virtual reality are two sides of the same coin: both are technological expressions of humanity's long-held desire to break out of the limitations of the physical body and the natural world.¹⁰ Until recently, this idea was purely theoretical; the recent emergence of virtual reality technology has made it concrete, justifying the conceptualization of cyberspace as virtual reality. The virtual reality cyberspace is inherently unexceptional. It creates a subjective experience of spatial, social, and moral reality that parallels the real world, calling for a parallel normative reality.¹¹ This conclusion leads to the argument that virtual reality technology may undermine the theoretical exceptionalistic foundation of cyberlaw, presenting a chance to move away from some of the more problematic exceptionalistic legal doctrines. For example, the vague cyberspace-specific legislation governing hacking may be replaced by clear and well-established criminal trespass provisions; ineffective cyberstalking and cyberharassment laws may be replaced by better-enforced general stalking and harassment laws; and unchecked cybersurveillance may be balanced by powerful constitutional privacy protection.¹²

7. See *infra* Part IV.B.

8. See *infra* Part IV.C.

9. See *infra* Part V.A.

10. See *infra* Part V.B.

11. See *infra* Part V.D.

12. See *infra* Part VI.

The second Part of this Article introduces the legal theory of technology exceptionalism and the mid-1990s debate between proponents of strong cyberspace exceptionalism and cyberspace unexceptionalists leading into the moderate cyberspace exceptionalism foundation of contemporary cyberlaw theory. Part III presents three examples of problematic cyberspace-specific legal regimes grounded in moderate cyberspace exceptionalism. Next, Part IV describes virtual reality technology, its legally significant cognitive characteristics, and the developing relationship between virtual reality and legal scholarship. Part V of the Article focuses on the conceptualization of cyberspace as virtual reality and its dramatic impact on cyberlaw theory. Finally, Part VI revisits the three examples presented in Part III, demonstrating how undermining the exceptionalistic foundation of cyberlaw theory presents an opportunity to move away from problematic cyberspace-specific legal regimes.

The early cyberspace exceptionalists got *Alice's Adventures in Wonderland* wrong. The fact that Wonderland is a separate alternate reality does not place it beyond the laws of the real world—that is not the reason why it is legally exceptional. Wonderland has its own rules because it is populated by fantastic creatures and talking animals. Cyberspace in the age of virtual reality is a *human* alternate reality, and that makes it unexceptional because wherever humans go, they carry with them their psychology, their society, and their laws.

II. CYBERSPACE EXCEPTIONALISM

In the early days of the Internet, the cyberspace exceptionalism debate formed the axle around which cyberlaw theory revolved.¹³ In broad terms, cyberspace exceptionalists stress the legally meaningful differences between cyberspace and the real world, and unexceptionalists argue that from a legal perspective, cyberspace and the real world are fundamentally equivalent.¹⁴ The importance of this deceptively simple disagreement should not be underestimated—as cyberspace exceptionalism is debated, cyberspace sovereignty and the very existence of cyberlaw as a separate and specific body of law hang in the balance. The turn of the millennium saw the appearance of a middle ground—a moderate form of cyberspace exceptionalism—which

13. See Julie E. Cohen, *Cyberspace As/And Space*, 107 COLUM. L. REV. 210, 213–14 (2007); Tim Wu, *Is Internet Exceptionalism Dead?*, in THE NEXT DIGITAL DECADE: ESSAYS ON THE FUTURE OF THE INTERNET 179, 179–80 (Berin Szoka & Adam Marcus eds., 2010).

14. See Ryan Calo, *Robotics and the Lessons of Cyberlaw*, 103 CALIF. L. REV. 513, 550–52 (2015); Cohen, *supra* note 13, at 213–14.

grew to become the theoretical foundation of contemporary cyberlaw.¹⁵ As a result, cyberspace norms and practice have been diverging from classic law to form cyberspace-specific legal rules in a process which may be problematic. This Part of the Article describes the origins and current state of cyberspace legal exceptionalism theory and its normative implications, forming a prelude to the Article's main argument—that the theoretical exceptionalistic foundation of cyberlaw may be shaken by the emergence of virtual reality technology.

A. *Technology Exceptionalism Theory*

The technological landscape is ever changing; however, not every technological change bears legal significance. A technology can be considered legally exceptional “when its introduction into the mainstream requires a systemic change to the law or legal institutions in order to reproduce, or if necessary displace, an existing balance of values.”¹⁶ In other words, the legal theory of technology exceptionalism deals with the question of whether or not a technological change impacts social values to an extent that a dramatic legal change is required.¹⁷

Samuel Warren and Louis Brandeis were famously motivated to write *The Right to Privacy*¹⁸—an 1890 article that defined a social value and a new legal right, influenced new laws, and gave birth to an important field of study¹⁹—by the development of technology like the Kodak camera, which generated “instantaneous photographs.”²⁰ Inventions like the smallpox vaccine in the late eighteenth century and the radio in the late nineteenth century brought about significant legal institutional change—the formation of centralized health care and regulatory agencies—leading to the modern model of the administrative state.²¹ The late nineteenth century's emergence of

15. See *infra* Part II.C.

16. Calo, *supra* note 14, at 552; see Mark Tushnet, *Internet Exceptionalism: An Overview from General Constitutional Law*, 56 WM. & MARY L. REV. 1637, 1638 (2015).

17. See Calo, *supra* note 14, at 553.

18. Samuel D. Warren & Louis D. Brandeis, *The Right to Privacy*, 4 HARV. L. REV. 193 (1890).

19. See Susan E. Gallagher, *Privacy and Conformity: Rethinking “The Right Most Valued by Civilized Men”*, 33 TOURO L. REV. 159, 160 (2017).

20. Warren & Brandeis, *supra* note 18, at 195; see MICHAEL PATRICK LYNCH, *THE INTERNET OF US: KNOWING MORE AND UNDERSTANDING LESS IN THE AGE OF BIG DATA* 89 (2016).

21. See Calo, *supra* note 14, at 553.

railroads²² and the automobile²³ revolutionized tort law, among other things.²⁴ And the fifteenth century invention of the printing press created a direct legal need for copyright laws²⁵ and incidentally helped shape Western civilization.²⁶ These are just a few examples of the many transformative technologies that can be considered legally exceptional.

Is cyberspace exceptional? It is certainly culturally, socially, and economically transformative; some even say it is the greatest invention of all time.²⁷ The actual emergence and development of cyberlaw—a broad field of study and legal practice specifically dedicated to the law of cyberspace—indicates that cyberspace has indeed effected systemic legal change. But is this change in line with the balance of values society wishes to uphold? Cyberspace exceptionalism cannot be asserted offhand. Because of its wide-reaching implications for cyberlaw and cyberspace governance, and because of its impact on the balance of real-world and online values, cyberspace exceptionalism theory has divided cyberlaw scholars for years after the advent of the Internet.

B. The Early Cyberspace Exceptionalism Debate

Early cyberspace exceptionalists, most prominently John Perry Barlow, David Johnson, and David Post, adopted what may be termed a “strong” position, arguing that cyberspace is so exceptional that it is, and should be, completely beyond the laws governing the real world.²⁸

22. See, e.g., JAMES W. ELY, JR., *RAILROADS AND AMERICAN LAW* viii (2001); EDWARD L. PIERCE, *A TREATISE ON AMERICAN RAILROAD LAW* iii–iv (Scholar’s Choice 2015) (1857); ISAAC F. REDFIELD, *A PRACTICAL TREATISE UPON THE LAW OF RAILWAYS* v–vi (Johnson Reprint Corp. 1972) (2d ed. 1858).

23. See, e.g., LAWRENCE M. FRIEDMAN & GRANT M. HAYDEN, *AMERICAN LAW: AN INTRODUCTION* 16–17 (Oxford Univ. Press 3d ed. 2017) (1984).

24. See Calo, *supra* note 14, at 553.

25. PAUL GOLDSTEIN, *COPYRIGHT’S HIGHWAY: FROM GUTENBERG TO THE CELESTIAL JUKEBOX* 31 (Stanford Univ. Press rev. ed. 2003) (1994); Niva Elkin-Koren, *The Changing Nature of Books and the Uneasy Case for Copyright*, 79 *GEO. WASH. L. REV.* 1712, 1713 (2011); see MARSHALL McLUHAN, *THE GUTENBERG GALAXY* 1 (16th ed. 2011).

26. See ELIZABETH L. EISENSTEIN, *THE PRINTING REVOLUTION IN EARLY MODERN EUROPE* xviii (2d ed. 2005).

27. See, e.g., Samantha Weinberg, *What’s the Greatest Invention of All Time?*, *ECONOMIST*: 1843 *MAG.* (Jan.–Feb. 2012), <https://www.1843magazine.com/intelligence/the-big-question/whats-the-greatest-invention-of-all-time> [<https://perma.cc/R9S7-RLUJ>].

28. Calo, *supra* note 14, at 551; Cohen, *supra* note 13, at 215–16; see Dan L. Burk, *Federalism in Cyberspace*, 28 *U. CONN. L. REV.* 1095, 1096 (1996); I. Trotter Hardy, *The Proper Legal Regime for “Cyberspace”*, 55 *U. PITT. L. REV.* 993, 994 (1994); Cameron Hutchinson, *Interpretation & the Internet*, 28 *J. MARSHALL J. COMPUTER & INFO. L.* 251, 253 (2010); David R. Johnson & David Post, *Law and Borders—The Rise of Law in*

Strong cyberspace exceptionalism was a distinctively utopian line of thought, holding that cyberspace is a freer and more liberal place that should be subject to its own laws and empowered by the consent of members of its own sovereign communities.²⁹ Proponents of strong cyberspace exceptionalism convinced many in the 1990s that even if governments wanted to apply the laws of the real world to the Internet, they would not be able to do so effectively because of the borderless nature of the new medium.³⁰ Reflecting this view, President Clinton said in 1998 that China's efforts to control the Internet are "like trying to nail Jell-O to the wall."³¹

Some scholars who can be described as cyberspace unexceptionalists, notably Jack Goldsmith and Tim Wu, challenged strong cyberspace exceptionalism's utopian, independent sovereignty vision, arguing that the cyberspace self-governance model is unwarranted and unfeasible.³² They were proven right: the strong exceptionalistic conception of cyberspace sovereignty did not survive the turn of the millennium. As the online communities of cyberspace developed and grew, it became evident that the utopian model of total cyberspace self-governance was far from practical.³³ Moreover,

Cyberspace, 48 STAN. L. REV. 1367, 1367–68 (1996); Henry H. Perritt, Jr., *Cyberspace Self-Government: Town Hall Democracy or Rediscovered Royalism?*, 12 BERKELEY TECH. L.J. 413, 413 (1997); David G. Post, *Governing Cyberspace*, 43 WAYNE L. REV. 155, 171 (1996); John Perry Barlow, *A Declaration of the Independence of Cyberspace*, ELEC. FRONTIER FOUND. (Feb. 8, 1996), <https://www.eff.org/cyberspace-independence> [https://perma.cc/D23H-GEGP].

29. Mark MacCarthy, *Internet Exceptionalism Revisited*, in THE NEXT DIGITAL DECADE, *supra* note 13, at 209, 209; *see* Cohen, *supra* note 13, at 216.

30. MacCarthy, *supra* note 29, at 209.

31. R. MICHAEL ALVAREZ & THAD E. HALL, POINT, CLICK, AND VOTE: THE FUTURE OF INTERNET VOTING 3 (2004).

32. *See* JACK GOLDSMITH & TIM WU, WHO CONTROLS THE INTERNET?: ILLUSIONS OF A BORDERLESS WORLD 10 (2d ed. 2008); James Boyle, *Foucault in Cyberspace: Surveillance, Sovereignty, and Hardwired Censors*, 66 U. CIN. L. REV. 177, 178 (1997); Jack L. Goldsmith, *Against Cyberanarchy*, 65 U. CHI. L. REV. 1199, 1200 (1998); Jack L. Goldsmith, *The Internet and the Abiding Significance of Territorial Sovereignty*, 5 IND. J. GLOBAL LEGAL STUD. 475, 475 (1998); H. Brian Holland, *Section 230 of the CDA: Internet Exceptionalism as a Statutory Construct*, in THE NEXT DIGITAL DECADE, *supra* note 13, at 189, 195; Neil Weinstock Netanel, *Cyberspace Self-Governance: A Skeptical View from Liberal Democratic Theory*, 88 CALIF. L. REV. 395, 403 (2000); Allan R. Stein, *The Unexceptional Problem of Jurisdiction in Cyberspace*, 32 INT'L LAW. 1167, 1167 (1998); Timothy S. Wu, Note, *Cyberspace Sovereignty?—The Internet and the International System*, 10 HARV. J.L. & TECH. 647, 649 (1997).

33. Cohen, *supra* note 13, at 217; *see* A. Michael Froomkin, *Habermas@discourse.net: Toward a Critical Theory of Cyberspace*, 116 HARV. L. REV. 749, 868 (2003); Alex Kozinski & Josh Goldfoot, *A Declaration of the Dependence of Cyberspace*, in THE NEXT DIGITAL DECADE, *supra* note 13, at 169, 170–71.

governments have shown a relatively effective ability to control the Internet, primarily by regulating intermediaries.³⁴

Strong cyberspace exceptionalists faced criticism on a second front. They envisioned cyberlaw, the law of cyberspace, as a distinct and specific body of law aimed at governing cyberspace behavior through completely separate norms and institutions.³⁵ This conception can bring to mind maritime law, a specific body of law which governs most, if not all, forms of activity within a well-defined, mostly separate domain of human conduct.³⁶ Judge Frank Easterbrook, however, had a different legal analogy in mind. During a cyberlaw conference keynote in Chicago, he famously likened the study of cyberlaw to the study of the law of the horse—a shallow application of general law to specialized endeavors.³⁷ According to this line of thinking, horses are traded, licensed, raced, shown, treated by veterinarians, and sometimes responsible for injuries to people, but the law deals with cases involving horses in the context of broader general rules.³⁸ It should therefore do the same with cyberspace.³⁹ Other scholars followed suit, arguing that cyberspace behaviors in the context of different fields of law can and should be subject to the legal doctrines of the real world rather than to cyberspace-specific laws.⁴⁰ Nevertheless, the exceptionalistic notion of cyberlaw as a body of

34. See Michael D. Birnhack & Niva Elkin-Koren, *The Invisible Handshake: The Reemergence of the State in the Digital Environment*, 8 VA. J.L. & TECH. 6, 14 (2003); MacCarthy, *supra* note 29, at 210; Ronald J. Mann & Seth R. Belzley, *The Promise of Internet Intermediary Liability*, 47 WM. & MARY L. REV. 239, 247–50 (2005); Nicolas Suzor, *The Role of the Rule of Law in Virtual Communities*, 25 BERKELEY TECH. L.J. 1817, 1822–23 (2010). See generally GOLDSMITH & WU, *supra* note 32, at 68 (remarking that governments chose to regulate local Internet intermediaries because of their gatekeeping role).

35. See Calo, *supra* note 14, at 550–51.

36. See *id.*; see also William M. Stahl, Note, *The Uncharted Waters of Cyberspace: Applying the Principles of International Maritime Law to the Problem of Cybersecurity*, 40 GA. J. INT'L & COMP. L. 247, 267 (2011). See generally THOMAS J. SCHOENBAUM, *ADMIRALTY AND MARITIME LAW* (5th ed. 2012).

37. See Frank H. Easterbrook, *Cyberspace and the Law of the Horse*, 1996 U. CHI. LEGAL F. 207, 207–08 (1996).

38. See *id.*

39. See *id.*

40. See, e.g., Susan W. Brenner, *Cybercrime Metrics: Old Wine, New Bottles?*, 9 VA. J.L. & TECH. 13, 21 (2004); Susan W. Brenner, *Is There Such a Thing as “Virtual Crime”?*, 4 CAL. CRIM. L. REV. 1, ¶ 120 (2001) [hereinafter Brenner, *Is There Such a Thing as “Virtual Crime”?*]; Richard A. Epstein, *Cybertrespass*, 70 U. CHI. L. REV. 73, 73–74 (2003); Joseph M. Olivenbaum, *CTRL-ALT-DELETE: Rethinking Federal Computer Crime Legislation*, 27 SETON HALL L. REV. 574, 576 (1997); Joseph H. Sommer, *Against Cyberlaw*, 15 BERKELEY TECH. L.J. 1145, 1145 (2000); Katherine J. Strandburg, *Home, Home on the Web and Other Fourth Amendment Implications of Technosocial Change*, 70 MD. L. REV. 614, 680 (2011).

cyberspace-specific laws and an independent field of study has persisted.

C. Contemporary Cyberspace Exceptionalism

The early cyberspace exceptionalism debate was characterized by distinct polarization, with exceptionalists and unexceptionalists sharply differing on questions of cyberspace sovereignty and normative autonomy. Contemporary cyberspace exceptionalism takes an intermediate position, which mainly draws from the work of Lawrence Lessig and Joel Reidenberg.⁴¹ Their main assertion is that law and technological architecture are related behavior-influencing social systems.⁴² Lessig in particular popularized this idea by introducing the catchphrase “code is law”—meaning that both similarly regulate behavior.⁴³

Lessig explicitly rejects strong cyberspace exceptionalism⁴⁴: in his view, cyberspace is normatively and conceptually connected to the real world in that cyberlaw and real-world law, cyberspace architecture and brick-and-mortar architecture, and the real-world economy and online economy all serve essentially similar social functions.⁴⁵ However, Lessig’s view should not be taken as unexceptionalistic.⁴⁶ He asserts that cyberspace technology is legally exceptional in that it reveals latent ambiguities in the law—an element which, among other things, justifies cyberlaw’s position as a body of cyberspace-specific laws.⁴⁷ He advocates the enforcement of some constitutional norms in cyberspace as a consequence of the functional similarities between technological architects and lawmakers, and not because of similarities between the digital environment and the real world.⁴⁸ Lessig favors self-regulation by architecture to external regulation by law even though both forms of control are linked;⁴⁹ in his view, effective government regulation is

41. Calo, *supra* note 14, at 552; Cohen, *supra* note 13, at 222; see LAWRENCE LESSIG, CODE: VERSION 2.0 24–26 (2d ed. 2006); Joel R. Reidenberg, *Lex Informatica: The Formulation of Information Policy Rules Through Technology*, 76 TEX. L. REV. 553, 554–55 (1998).

42. See LESSIG, *supra* note 41, at 83–85; Reidenberg, *supra* note 41, at 568–73.

43. See LESSIG, *supra* note 41, at 1, 5.

44. *Id.* at ix.

45. See *id.* at 122–25.

46. See Cohen, *supra* note 13, at 222.

47. Calo, *supra* note 14, at 559; Cohen, *supra* note 13, at 221; see LESSIG, *supra* note 41, at 24–26; Lawrence Lessig, *The Law of the Horse: What Cyberlaw Might Teach*, 113 HARV. L. REV. 501, 502 (1999).

48. See LESSIG, *supra* note 41, at 255–56, 318; Lessig, *supra* note 47, at 527–28.

49. See LESSIG, *supra* note 41, at 23–24.

best achieved through indirectly regulating architecture.⁵⁰ Moreover, he sees cyberspace and cyberspace communities as different and unique, existing beyond many of the architectural and economic constraints of the real world.⁵¹ Lessig's position can best be described as one of moderate cyberspace exceptionalism.⁵² This position now forms the consensual theoretical backbone of cyberlaw.⁵³

An implicit belief in moderate, nonutopian cyberspace exceptionalism underlies the work of many contemporary cyberlaw scholars focusing on the unique creative, cultural, and economic aspects of cyberspace.⁵⁴ Cyberspace is mostly seen as legally exceptional but not completely separate or disconnected from the real world.⁵⁵ While not a product of utopian cyberspace autonomy, cyberlaw has grown into a well-established body of cyberspace-specific laws and a scholarly field of study in its own right—dealing with, as Lessig predicted, questions of cyberspace social values and their connections to the real world.⁵⁶ Cyberlaw courses “have become a staple in law school curricula.”⁵⁷ The dust had apparently settled on the cyberspace exceptionalism debate.

50. See *id.* at 61–62.

51. See LAWRENCE LESSIG, *THE FUTURE OF IDEAS: THE FATE OF THE COMMONS IN A CONNECTED WORLD* 120–21 (2001); see also LESSIG, *supra* note 41, at 83.

52. See Cohen, *supra* note 13, at 222. The classification of strong versus moderate exceptionalism is Ryan Calo's. See Calo, *supra* note 14, at 551–52.

53. Cohen, *supra* note 13, at 222; Suzanna Sherry, *Haste Makes Waste: Congress and the Common Law in Cyberspace*, 55 VAND. L. REV. 309, 316 (2002); see Eric Goldman, *The Third Wave of Internet Exceptionalism*, in *THE NEXT DIGITAL DECADE*, *supra* note 13, at 165, 167; Orin S. Kerr, *Accounting for Technological Change*, 36 HARV. J.L. & PUB. POL'Y 403, 407 (2013); Abbey Stemler, *Regulation 2.0: The Marriage of New Governance and Lex Informatica*, 19 VAND. J. ENT. & TECH. L. 87, 105–06 (2016).

54. See, e.g., YOCHAI BENKLER, *THE WEALTH OF NETWORKS: HOW SOCIAL PRODUCTION TRANSFORMS MARKETS AND FREEDOM* 16–17 (2006); LAWRENCE LESSIG, *REMIX: MAKING ART AND COMMERCE THRIVE IN THE HYBRID ECONOMY* 155 (2008); JONATHAN L. ZITTRAIN, *THE FUTURE OF THE INTERNET—AND HOW TO STOP IT* 104–05 (2008); Kerr, *supra* note 53, at 407; Sherry, *supra* note 53, at 316; Jonathan L. Zittrain, *The Generative Internet*, 119 HARV. L. REV. 1974, 1997–98 (2006).

55. See Yochai Benkler, *Technology, Law, Freedom and Development*, 1 INDIAN J.L. & TECH. 1, 2–4 (2005); Cohen, *supra* note 13, at 225–26; see also DAVID G. POST, *IN SEARCH OF JEFFERSON'S MOOSE: NOTES ON THE STATE OF CYBERSPACE* 185 (2009) (conceding that his strong exceptionalistic position is no longer popular).

56. See Lessig, *supra* note 47, at 522.

57. JACQUELINE LIPTON, *RETHINKING CYBERLAW: A NEW VISION FOR INTERNET LAW* 1 (2015).

D. Exceptionalism and Cyberspace-Specific Rules

The theoretical exceptionalistic foundation of cyberlaw advances the formation of new cyberspace-specific norms and practice, a normative divergence from classic law.⁵⁸ In other contexts, this sort of divergence had made a significant impact on courts and other legal institutions, driving them to specialization.⁵⁹ Institutional specialization has the obvious advantage of creating an environment for institutional expertise,⁶⁰ but it can also incur different kinds of “divergence costs.”⁶¹ One form of divergence cost is particularly salient in the cyberlaw context: the fact that completely new laws and practices often come with costly flaws that need to be addressed.

The notion that cyberspace is legally exceptional facilitates the formation of cyberspace-specific laws and regulations. As these legal rules are developed and enacted, cyberlaw norms and practice branch off from classic legal doctrine—namely, old laws that have been refined for years. The resulting untested laws and practices can serve to upset, rather than uphold, the proper balance of social values.⁶² This potentially harmful effect of cyberspace exceptionalism seems to be especially present in the criminal law context, where government action is implicated, or perhaps it is particularly noticeable in the context of criminal norms because these tend to govern more extreme behavior.⁶³ The next Part of the Article demonstrates this effect: a distinct disadvantage of the exceptionalistic theoretical foundation of cyberlaw.

III. EXCEPTIONALISM AS A PROBLEM

Cyberspace-specific rules have been around for over two decades and have flourished despite unexceptionalistic objections.⁶⁴ The now widely accepted moderate exceptionalistic foundation of

58. See *infra* Part III.

59. See, e.g., Lawrence Baum, *Judicial Specialization and the Adjudication of Immigration Cases*, 59 DUKE L.J. 1501, 1536–42 (2010); Harold H. Bruff, *Specialized Courts in Administrative Law*, 43 ADMIN. L. REV. 329, 330–32 (1991); Ellen R. Jordan, *Specialized Courts: A Choice?*, 76 NW. U. L. REV. 745, 745 (1981); Richard L. Revesz, *Specialized Courts and the Administrative Lawmaking System*, 138 U. PA. L. REV. 1111, 1116–17 (1990).

60. See Baum, *supra* note 59, at 1538.

61. See Revesz, *supra* note 59, at 1140.

62. See JULIE E. COHEN, *CONFIGURING THE NETWORKED SELF: LAW, CODE, AND THE PLAY OF EVERYDAY PRACTICE* 62, 107–09, 187–88 (2012); *infra* Part III.

63. See *infra* Part III.

64. See, e.g., Orin S. Kerr, *Vagueness Challenges to the Computer Fraud and Abuse Act*, 94 MINN. L. REV. 1561, 1561 (2010) (“In 1984, Congress enacted a narrow statute designed to criminalize unauthorized access to computers.”); *supra* Part II.B.

cyberlaw facilitates the formation and development of such rules. This Part of the Article presents three examples of problematic cyberspace-specific legal regimes: criminal computer hacking legislation, cyberharassment and cyberstalking laws, and cybersurveillance norms. Virtual reality technology, which will be introduced in Part IV below, may present an opportunity to start moving away from these and other problematic legal regimes by rethinking cyberspace exceptionalism.

A. Vague Cyberspace-Specific Hacking Legislation

Cybercrime literature distinguishes between when a computer serves as a tool in the commission of a crime and when a computer serves as the target of a crime—the former is typically handled by traditional criminal laws and the latter by specialized computer misuse statutes.⁶⁵ The key provision of the Computer Fraud and Abuse Act of 1986 (CFAA),⁶⁶ the main federal computer misuse law, is the criminalization of “unauthorized access” to computers—popularly known as computer hacking.⁶⁷ The original version of unauthorized access under the CFAA was very limited in scope; in the mid-1990s, however, the law was amended and dramatically expanded.⁶⁸ Broad unauthorized access provisions now form the backbone of the CFAA, all US state-level computer misuse legislation,⁶⁹ and computer hacking laws all over the world by way of the 2001 Council of Europe Convention on Cybercrime, which includes a model for computer misuse legislation.⁷⁰

Key terms like “authority” and “access” in the CFAA and in similar legislation are deemed vague and open to interpretation by

65. See Scott Charney & Kent Alexander, *Computer Crime*, 45 EMORY L.J. 931, 934, 950 (1996); Orin S. Kerr, *Cybercrime’s Scope: Interpreting “Access” and “Authorization” in Computer Misuse Statutes*, 78 N.Y.U. L. REV. 1596, 1606–07, 1615 (2003).

66. Computer Fraud and Abuse Act of 1986, Pub. L. No. 99-474, 100 Stat. 1213 (1986) (codified as amended at 18 U.S.C. § 1030 (2012)).

67. 18 U.S.C. § 1030 (2012).

68. See Kerr, *supra* note 64, at 1561, 1566–68.

69. Susan W. Brenner, *State Cybercrime Legislation in the United States of America: A Survey*, 7 RICH. J.L. & TECH. 28, ¶¶ 2, 15 (2001).

70. Council of Europe, Convention on Cybercrime art. 6, Nov. 23, 2001, C.E.T.S. No. 185, <https://www.coe.int/en/web/conventions/full-list/-/conventions/rms/0900001680081561> [<https://perma.cc/77RL-JWDJ>]; see Amalie M. Weber, *The Council of Europe’s Convention on Cybercrime*, 18 BERKELEY TECH. L.J. 425, 430–31 (2003); see also Susan W. Brenner, *The Council of Europe’s Convention on Cybercrime*, in CYBERCRIME: DIGITAL COPS IN A NETWORKED ENVIRONMENT 207, 210 (Jack M. Balkin et al. eds., 2007) (“[The Convention] equates cybercrime with crime and therefore treats cybercrime as an international threat which is to be dealt with by the criminal justice system[.]”).

courts and law enforcement agencies; furthermore, basic definitions like “computer” are distinctly open ended.⁷¹ In 2008, for example, cyberbullying suspect Lori Drew was indicted under the CFAA for violating social network Myspace’s terms of service with tragic consequences.⁷² In 2013, Internet activist Aaron Swartz committed suicide while under CFAA indictment for downloading a large number of academic journal articles with the intent to release them to the public as part of his campaign for free and open access to information.⁷³ These cases, and others,⁷⁴ brought about significant public and scholarly criticism of computer misuse statutes and calls for cybercrime legislation reforms.⁷⁵ While legislators consider such reforms, cyberspace-specific computer misuse laws continue to label minor Internet infractions as criminal computer hacking.⁷⁶

Overly broad unauthorized access laws present an even wider problem: they create a reality in which going through authorization procedures has become a normal daily action, contributing to a closed

71. See Beryl A. Howell, *Real World Problems of Virtual Crime*, 7 YALE J.L. & TECH. 103, 113 (2005); Kerr, *supra* note 65, at 1619–22; Kerr, *supra* note 64, at 1562; David J. Schmitt, *The Computer Fraud and Abuse Act Should Not Apply to the Misuse of Information Accessed with Permission*, 47 CREIGHTON L. REV. 423, 423 (2014); David Thaw, *Criminalizing Hacking, Not Dating: Reconstructing the CFAA Intent Requirement*, 103 J. CRIM. L. & CRIMINOLOGY 907, 909–10 (2013).

72. Lori Drew was indicted under the CFAA with violation of Myspace’s terms of service after cyberbullying thirteen-year-old Megan Meier, who committed suicide. See *United States v. Drew*, 259 F.R.D. 449, 452 (C.D. Cal. 2009); Kerr, *supra* note 64, at 1578–79.

73. See Sarah A. Constant, Comment, *The Computer Fraud and Abuse Act: A Prosecutor’s Dream and a Hacker’s Worst Nightmare—The Case Against Aaron Swartz and the Need to Reform the CFAA*, 16 TUL. J. TECH. & INTELL. PROP. 231, 240–41 (2013).

74. See, e.g., *United States v. Nosal*, 676 F.3d 854, 864 (9th Cir. 2012) (en banc) (affirming dismissal of an indictment alleging CFAA violations against a former employee for using another employee’s password in violation of corporate policy); see also *United States v. Nosal*, 844 F.3d 1024, 1041 (9th Cir. 2016) (affirming the same employee’s conviction under another provision of the CFAA).

75. See, e.g., *Nosal*, 844 F.3d at 1054–55 (Reinhardt, J., dissenting); Kerr, *supra* note 64, at 1563; Schmitt, *supra* note 71, at 449–50; Thaw, *supra* note 71, at 909–10; *Computer Fraud and Abuse Act Reform*, ELEC. FRONTIER FOUND., www.eff.org/issues/cfaa [<https://perma.cc/RU5R-9WVJ>] (last visited Nov. 9, 2017); John Dean, *Dealing with Aaron Swartz in the Nixonian Tradition: Overzealous Overcharging Leads to a Tragic Result*, VERDICT (Jan. 25, 2013), <https://verdict.justia.com/2013/01/25/dealing-with-aaron-swartz-in-the-nixonian-tradition> [<https://perma.cc/YRF8-RTT9>]; Lawrence Lessig, *Prosecutor as Bully*, LESSIG (Jan. 12, 2013), www.lessig.org/2013/01/prosecutor-as-bully [<https://perma.cc/9BAR-Z5S5>].

76. Press Release, U.S. House of Representatives, Lofgren, Wyden, Paul Introduce Bipartisan, Bicameral Aaron’s Law to Reform Computer Fraud and Abuse Act (Apr. 21, 2015), <https://lofgren.house.gov/news/documentsingle.aspx?DocumentID=397911> [<https://perma.cc/ZSX4-4TSD>].

digital society.⁷⁷ Critics argue that these provisions promote secrecy, limit creativity through unbalanced intellectual property rights enforcement, discourage reverse engineering, and encourage the use of invasive security measures.⁷⁸ Arguably, criminal laws should clearly delineate socially acceptable and unacceptable behavior and allow for everyday practice while targeting wrongdoers; unauthorized access statutes fail to do so.⁷⁹ The exceptionalistic unauthorized access legal regime has become a major factor limiting individual digital freedoms, particularly with regards to freedom of information, copyright law, trade secrets, patents, and the right to privacy.⁸⁰

B. Ineffective Cyberstalking and Cyberharassment Laws

Cyberspace society is often described as egalitarian, pluralist, and liberal, promoting democracy and individual freedom—a romantic conception encouraged by social media corporations.⁸¹ However, for many Internet users, especially women, this ideal picture is marred by personal experiences of online hostility and abuse.⁸² Psychologists attribute the prevalence of aggressive behavior in cyberspace to a disinhibition effect—the online environment strips away normal inhibitions, literally bringing out the worst in some people.⁸³ Harassment and stalking in cyberspace can be an even more severe problem than in real life; these crimes are easier to perpetrate, can have a more lasting effect, and more often take the form of mob behavior.⁸⁴

77. See COHEN, *supra* note 62, at 203.

78. See *id.*; Randal C. Picker, *Access and the Public Domain*, 49 SAN DIEGO L. REV. 1183, 1184 (2012); Trevor A. Thompson, Comment, *Terrorizing the Technological Neighborhood Watch: The Alienation and Deterrence of the “White Hats” Under the CFAA*, 36 FLA. ST. U. L. REV. 537, 541 (2009).

79. See COHEN, *supra* note 62, at 207.

80. See *id.* at 203–11.

81. See, e.g., Mark Zuckerberg, *Building Global Community*, FACEBOOK (Feb. 16, 2017), <https://www.facebook.com/notes/mark-zuckerberg/building-global-community/10154544292806634/> [<https://perma.cc/XA5T-FX35>].

82. According to a 2014 Pew Research Center survey of 2,839 US adults, 73 percent witnessed online behavior meant to offend, embarrass, harass, or threaten, and 65 percent in the 18–29 age group fell victim to such behavior themselves (40 percent in all age groups). Women, especially young women, were more likely to experience the more severe forms of aggression. Maeve Duggan, *5 Facts About Online Harassment*, PEW RES. CTR. (Oct. 30, 2014), www.pewresearch.org/fact-tank/2014/10/30/5-facts-about-online-harassment [<https://perma.cc/TX8J-JTAP>].

83. See John Suler, *The Online Disinhibition Effect*, 7 CYBERPSYCHOL. & BEHAV. 321, 321 (2004).

84. See DANIELLE KEATS CITRON, HATE CRIMES IN CYBERSPACE 4–5 (2014); Tushnet, *supra* note 16, at 1647–48.

Nearly all US states have enacted cyberspace-specific criminal harassment or stalking laws.⁸⁵ These statutes form an inconsistent legal regime with substantial normative variance across different jurisdictions.⁸⁶ For instance, some statutes use an objective reasonableness standard based on the perspective of the victim, some use a subjective reasonableness standard based on the same perspective, some use an objective reasonableness standard based on the perspective of the perpetrator, others use a specific intent element, and still others use a combination of the above.⁸⁷

The main problem with these specific cyberharassment and cyberstalking laws is that they are very poorly enforced.⁸⁸ One reason for this is the fact that, as we have just seen, criminal cyberstalking and cyberharassment norms vary greatly across jurisdictions. These circumstances present a serious enforcement problem for two reasons: first, online behavior mostly ignores state borders; second, a complex, inconsistent, incoherent legal regime is inherently difficult to enforce.⁸⁹ To illustrate, in one case, a graduate student who fell victim to sexual cyberharassment by an ex-boyfriend was incorrectly informed by local police officers that there was nothing they could do because she was “over eighteen” and because they had no jurisdiction over the Internet.⁹⁰ When she contacted the Federal Bureau of Investigation (FBI), she was told again, incorrectly, that hers was a civil matter and that she should get a gun for protection.⁹¹

The enforcement problem is significantly compounded by the fact that law enforcement tends to misunderstand, dismiss, and trivialize cyberharassment crimes.⁹² Again to illustrate, a police officer’s response to a complaint made by a journalist after receiving

85. As of 2013, Nebraska is the only US state to have only traditional harassment and stalking statutes that make no specific reference to the Internet. Steven D. Hazelwood & Sarah Koon-Magnin, *Cyber Stalking and Cyber Harassment Legislation in the United States: A Qualitative Analysis*, 7 INT’L J. CYBER CRIMINOLOGY 155, 159 (2013).

86. *See id.* at 166; *see also* Aimee Fukuchi, Note, *A Balance of Convenience: The Use of Burden-Shifting Devices in Criminal Cyberharassment Law*, 52 B.C. L. REV. 289, 299 (2011).

87. *See* Fukuchi, *supra* note 86, at 302.

88. *See* Danielle Keats Citron, *Law’s Expressive Value in Combating Cyber Gender Harassment*, 108 MICH. L. REV. 373, 402–04 (2009).

89. *See* Cassie Cox, *Protecting Victims of Cyberstalking, Cyberharassment, and Online Impersonation Through Prosecutions and Effective Laws*, 54 JURIMETRICS J. 277, 292–94 (2014); Naomi Harlin Goodno, *Cyberstalking, A New Crime: Evaluating the Effectiveness of Current State and Federal Laws*, 72 MO. L. REV. 125, 140–41 (2007); Hazelwood & Koon-Magnin, *supra* note 85, at 167–68.

90. CITRON, *supra* note 84, at 47.

91. *Id.*

92. *See id.* at 79–85.

death threats on Twitter was “What is Twitter?,” followed by a recommendation to stop using it.⁹³ In another case, officers advised a female law student who received continuous sexually explicit threats of violence to ignore cyberharassers who are “just boys being boys” and to “clean up her Internet [history].”⁹⁴

Further complicating matters is the fact that vigorous enforcement of cyberharassment and cyberstalking crimes is seen by many legal scholars and practitioners as antithetical to freedom of information interests and possibly the First Amendment.⁹⁵ Cyberstalking and cyberharassment behaviors continue to be subject to an ineffective exceptionalistic legal regime while, for many, cyberspace has become an unwelcoming place.⁹⁶

C. Unchecked Cybersurveillance

In June 2013, former National Security Agency (NSA) contractor Edward Snowden started leaking classified NSA documents to the press, revealing—among other things—that the US government and several foreign allies had created numerous clandestine, extensive cybersurveillance programs that would have never been accepted by most of the US public or approved by a majority of its elected representatives.⁹⁷ These programs collect, analyze, and store nearly everything a typical user, domestic or foreign, does on the Internet by integrating multiple intelligence sources, including real-time access into the databases of service providers like Yahoo, Microsoft, Facebook, and Google; fiber-optic infrastructure wiretaps; satellite

93. *Id.* at 84; Amanda Hess, *Why Women Aren't Welcome on the Internet*, PAC. STANDARD (Jan. 6, 2014), <https://psmag.com/social-justice/women-arent-welcome-internet-72170> [<https://perma.cc/98UM-77UA>].

94. *See* CITRON, *supra* note 84, at 87.

95. *Id.* at 190–91; *see* Michal Buchhandler-Raphael, *Overcriminalizing Speech*, 36 CARDOZO L. REV. 1667, 1698 (2015); Tushnet, *supra* note 16, at 1647–48; Eugene Volokh, *One-to-One Speech vs. One-to-Many Speech, Criminal Harassment Laws, and “Cyberstalking”*, 107 NW. U. L. REV. 731, 751 (2013).

96. *See* Hess, *supra* note 93; Joel Stein, *How Trolls Are Ruining the Internet*, TIME (Aug. 18, 2016), time.com/4457110/internet-trolls [<https://perma.cc/7DKE-NM3Y>].

97. *See* Margaret Hu, *Taxonomy of the Snowden Disclosures*, 72 WASH. & LEE L. REV. 1679, 1685–86 (2015); Zoe Lofgren, *Do Modern Americans Have Fourth Amendment Protection?*, 54 SANTA CLARA L. REV. 901, 905 (2014); Russell L. Weaver, *Cybersurveillance in a Free Society*, 72 WASH. & LEE L. REV. 1207, 1207–08 (2015); Kennedy Elliot & Terri Rugar, *Six Months of Revelations on NSA*, WASH. POST (Dec. 23, 2013), www.washingtonpost.com/wp-srv/special/national/nsa-timeline [<https://perma.cc/3L58-VHAF>]; Ewen MacAskill & Gabriel Dance, *NSA Files: Decoded, What the Revelations Mean for You*, GUARDIAN (Nov. 1, 2013), <https://www.theguardian.com/world/interactive/2013/nov/01/snowden-nsa-files-surveillance-revelations-decoded> [<https://perma.cc/YL8H-GBVH>].

surveillance; software and hardware backdoors; and malware.⁹⁸ The authenticity of Snowden's leaked documents was later confirmed by US government officials.⁹⁹ Lately, key officials in the Trump administration have stated intentions to expand government surveillance powers.¹⁰⁰

These government cybersurveillance practices have a normative cause. The Supreme Court has long held that the Fourth Amendment,¹⁰¹ which limits real-life government surveillance, does not apply to surveillance in cyberspace since there is, generally speaking, no expectation of privacy in information voluntarily disclosed in an intangible, mediated environment.¹⁰² In the absence of

98. See Barton Gellman et al., *In NSA-Intercepted Data, Those Not Targeted Far Outnumber the Foreigners Who Are*, WASH. POST (July 5, 2014), https://www.washingtonpost.com/world/national-security/in-nsa-intercepted-data-those-not-targeted-far-outnumber-the-foreigners-who-are/2014/07/05/8139adf8-045a-11e4-8572-4b1b969b6322_story.html?utm_term=.01dc8edbf04e [https://perma.cc/KTX4-QQU7]; Barton Gellman & Laura Poitras, *U.S., British Intelligence Mining Data from Nine U.S. Internet Companies in Broad Secret Program*, WASH. POST (June 7, 2013), https://www.washingtonpost.com/investigations/us-intelligence-mining-data-from-nine-us-internet-companies-in-broad-secret-program/2013/06/06/3a0c0da8-cebf-11e2-8845-d970ccb04497_story.html?utm_term=.c5cde990ac87 [https://perma.cc/S7AJ-UC35]; Glenn Greenwald, *XKeyscore: NSA Tool Collects 'Nearly Everything a User Does on the Internet'*, GUARDIAN (July 31, 2013, 8:56 AM), www.theguardian.com/world/2013/jul/31/nsa-top-secret-program-online-data [https://perma.cc/DST2-L7RJ]; Ewen MacAskill et al., *GCHQ Taps Fibre-Optic Cables for Secret Access to World's Communications*, GUARDIAN (June 21, 2013, 12:23 PM), <https://www.theguardian.com/uk/2013/jun/21/gchq-cables-secret-world-communications-nsa> [https://perma.cc/334L-P36G]; MacAskill & Dance, *supra* note 97.

99. See Adam Gabbatt, *Obama Acknowledges Edward Snowden Disclosures in NSA Reform Speech*, GUARDIAN (Jan. 17, 2014, 1:54 PM), www.theguardian.com/world/2014/jan/17/obama-acknowledges-edward-snowden-nsa-reform [https://perma.cc/2T4A-QJBQ]; Mike Masnick, *Former CIA/NSA Boss Michael Hayden Admits Ed Snowden Was a Whistleblower*, TECHDIRT (July 28, 2014, 9:02 AM), www.techdirt.com/articles/20140727/07183528026/former-ciansa-boss-michael-hayden-admits-ed-snowden-was-whistleblower.shtml [https://perma.cc/9TJZ-YDUF]; Alex Wilhelm, *Leaks Unbound: NSA Admits Snowden Took Up to 200K Documents*, TECHCRUNCH (Nov. 14, 2013), techcrunch.com/2013/11/14/leaks-unbound-nsa-admits-snowden-took-up-to-200k-documents [https://perma.cc/UY34-UBUY].

100. See, e.g., Tony Romm, *Silicon Valley May Find a Lot to Fear in Trump's FBI Director Replacement*, RECODE (May 9, 2017, 8:06 PM), <https://www.recode.net/2017/5/9/15601948/james-comey-fbi-fire-donald-trump-president-government-surveillance-tech> [https://perma.cc/3KPW-AP4H]; Chris Strohm, *FBI and NSA Poised to Gain New Surveillance Powers Under Trump*, BLOOMBERG (Nov. 29, 2016, 4:00 AM), www.bloomberg.com/news/articles/2016-11-29/fbi-and-nsa-poised-to-gain-new-surveillance-powers-under-trump [https://perma.cc/3556-TQZE].

101. See U.S. CONST. amend. IV.

102. See William Baude & James Y. Stern, *The Positive Law Model of the Fourth Amendment*, 129 HARV. L. REV. 1821, 1871 (2016); Orin S. Kerr, *The Case for the Third-Party Doctrine*, 107 MICH. L. REV. 561, 563 (2009); Daniel J. Solove, *A Taxonomy of Privacy*, 154 U. PA. L. REV. 477, 526 (2006) [hereinafter Solove, *Taxonomy of Privacy*]; Daniel J. Solove, *Digital Dossiers and the Dissipation of Fourth Amendment Privacy*, 75 S.

constitutional privacy protection, government cybersurveillance is regulated by a system of complex, confusing, poorly understood, incomplete, and sometimes overlapping and conflicting statutes.¹⁰³ A government agency cannot engage in physical surveillance of a private place absent a judicial warrant or special circumstances.¹⁰⁴ At the same time, mass collection of private information in cyberspace is conducted routinely and continuously: blanket judicial authorizations are given to entire surveillance programs by an *ex parte* secret court that almost never denies an application regardless of scope or circumstances.¹⁰⁵

Total, unchecked surveillance stifles creativity, individuality, free speech, and free thought as the fear of being watched changes behavior and thinking.¹⁰⁶ Moreover, it leads to government and institutional corruption.¹⁰⁷ Lax exceptionalistic cyberspace privacy norms enable mass cybersurveillance, which extends to GPS-equipped smartphones, Internet protocol cameras, vehicles, home automation systems, smart appliances, wearable technology, and other networked

CAL. L. REV. 1083, 1122, 1134–38 (2002) [hereinafter Solove, *Digital Dossiers*]; Russell L. Weaver, *The Fourth Amendment and Technologically Based Surveillance*, 48 TEX. TECH L. REV. 231, 238 (2015). In some recent decisions, the Court does carefully indicate a willingness to look beyond this traditional analysis. See *infra* Part VI.C.

103. See Patricia L. Bellia, *Designing Surveillance Law*, 43 ARIZ. ST. L.J. 293, 299 (2011); Patricia L. Bellia, *Surveillance Law Through Cyberlaw's Lens*, 72 GEO. WASH. L. REV. 1375, 1378 (2004); Erin Murphy, *The Politics of Privacy in the Criminal Justice System: Information Disclosure, the Fourth Amendment, and Statutory Law Enforcement Exemptions*, 111 MICH. L. REV. 485, 495 (2013); Solove, *Digital Dossiers*, *supra* note 102, at 1148–51; Daniel J. Solove, *Reconstructing Electronic Surveillance Law*, 72 GEO. WASH. L. REV. 1264, 1266 (2004).

104. See U.S. CONST. amend. IV; Orin S. Kerr, *Lifting the "Fog" of Internet Surveillance: How a Suppression Remedy Would Change Computer Crime Law*, 54 HASTINGS L.J. 805, 811 (2003); Henry H. Perritt, Jr. & Eliot O. Sprague, *Drones*, 17 VAND. J. ENT. & TECH. L. 673, 739 (2015).

105. See Orin S. Kerr, *A Rule of Lenity for National Security Surveillance Law*, 100 VA. L. REV. 1513, 1513–14 (2014); Peter Margulies, *Dynamic Surveillance: Evolving Procedures in Metadata and Foreign Content Collection After Snowden*, 66 HASTINGS L.J. 1, 5 (2014). Between 2008 and 2013, for example, the Foreign Intelligence Surveillance Court (FISC) denied only two applications out of nearly 8,600. See Laura K. Donohue, *NSA Surveillance May Be Legal—But It's Unconstitutional*, WASH. POST (June 21, 2013), https://www.washingtonpost.com/opinions/nsa-surveillance-may-be-legal--but-its-unconstitutional/2013/06/21/b9ddec20-d44d-11e2-a73e-826d299ff459_story.html?utm_term=.7f8b2ac33c94 [https://perma.cc/8RZV-NVVK].

106. See Neil M. Richards, *The Dangers of Surveillance*, 126 HARV. L. REV. 1934, 1945–48 (2013); Nadine Strossen, *Beyond the Fourth Amendment: Additional Constitutional Guarantees That Mass Surveillance Violates*, 63 DRAKE L. REV. 1143, 1153 (2015).

107. See Richards, *supra* note 106, at 1952–53.

devices.¹⁰⁸ The outcome may look a lot like an Orwellian surveillance society.¹⁰⁹

IV. VIRTUAL REALITY AND THE LAW

Interest in virtual reality is on the rise.¹¹⁰ In 2014, Mark Zuckerberg used these words to introduce Facebook's \$2 billion acquisition of virtual reality startup Oculus VR: "The incredible thing about the technology is that you feel like you're actually present in another place with other people. People who try it say it's different from anything they've ever experienced in their lives."¹¹¹ This Part of the Article describes virtual reality technology, its recent emergence, and its legally meaningful subjective cognitive effects. In doing so, it addresses the developing relationship between virtual reality and legal thought—from the early legal interest in virtual worlds to the most recent work addressing virtual reality technology.

A. Early Legal Interest in Virtual Worlds

Virtual worlds are online environments that began to emerge around the turn of the millennium, allowing users to interact with one another and with elements in a simulated environment.¹¹² They are designed to be accessed through standard home computer systems with two-dimensional displays, making them extremely affordable and readily accessible but also limited in terms of performance and user experience.¹¹³ For example, World of Warcraft, a popular medieval fantasy game world launched in 2004, had 5.5 million paying subscribers as of 2015.¹¹⁴ Second Life, launched in 2003, features an

108. See Russell D. Covey, *Pervasive Surveillance and the Future of the Fourth Amendment*, 80 MISS. L.J. 1289, 1292–93 (2011).

109. See generally GEORGE ORWELL, NINETEEN EIGHTY-FOUR (1949).

110. For a graphical representation of Google News search popularity of the topic over time, see *Virtual Reality (Topic)*, GOOGLE TRENDS, https://trends.google.com/trends/explore?date=all_2008&gprop=news&q=%2Fm%2F07_ny (last visited Jan. 10, 2018).

111. See Mark Zuckerberg, FACEBOOK (Mar. 25, 2014), <https://www.facebook.com/zuck/posts/10101319050523971> [<https://perma.cc/UK9W-V8J5>]; see also *infra* note 131 and accompanying text.

112. See Bruce Damer, *Meeting in the Ether: A Brief History of Virtual Worlds as a Medium for User-Created Events*, 1 J. VIRTUAL WORLDS RES. 1, 2 (2008).

113. See RICHARD A. BARTLE, DESIGNING VIRTUAL WORLDS 19–20 (2004).

114. Each user is paying around fifteen dollars per month. *World of Warcraft: Subscription*, BLIZZARD ENT., us.battle.net/shop/en/product/world-of-warcraft-subscription [<https://perma.cc/83WW-DWAB>] (last visited Jan. 11, 2018). World of Warcraft user numbers are down from a peak of 12 million in 2010. See *Number of World of Warcraft (WoW) Subscribers from 1st Quarter 2005 to 3rd Quarter 2015 (in Millions)*, STATISTA,

economy with a gross domestic product of \$500 million where users create and trade virtual reality goods and services.¹¹⁵ Hundreds of other, mostly smaller, virtual worlds are active, and dozens open and close every year; some are geared towards children or teens, some are for fans of particular films, books, or television shows, and some are about specific interest areas such as music, sports, or education.¹¹⁶ Virtual worlds have garnered a substantial amount of academic interest,¹¹⁷ particularly from cyberlaw scholarship, becoming the subject of multiple legal books and, by one count, some two hundred law journal articles.¹¹⁸ Scholars have explored issues of privacy, creativity, and expression within virtual worlds: an important first foray into the legal implications of virtual reality technology and a body of work with significant relevant insight for later research.¹¹⁹

www.statista.com/statistics/276601/number-of-world-of-warcraft-subscribers-by-quarter [<https://perma.cc/ZKC9-4CFZ>] (last visited Jan. 11, 2018).

115. This is an actual figure, current as of 2015; one user is reported to have sold 300,000 virtual dresses in Second Life, for around four dollars each. Maria Korolov, *Second Life GDP Totals \$500 Million*, HYPERGRID BUS. (Nov. 11, 2015), www.hypergridbusiness.com/2015/11/second-life-gdp-totals-500-million [<https://perma.cc/E464-BQ8F>]. Second Life's GDP makes its economy larger than that of a number of real-world countries. See Martin Bryant, *Think Second Life Died? It Has a Higher GDP Than Some Countries*, TNW: INSIDER (Nov. 7, 2015), <https://thenextweb.com/insider/2015/11/07/think-second-life-died-it-has-a-higher-gdp-than-some-countries/> [<https://perma.cc/56TV-VSMP>]. It is worth noting, however, that Second Life has run into a number of technical, legal (including issues related to financial regulation, taxation, intellectual property, and inappropriate content), and public image problems. Its growth in recent years has been halted. See Kristina Dell, *Second Life's Real-World Problems*, TIME (Aug. 9, 2007), content.time.com/time/magazine/article/0,9171,1651500,00.html [<https://perma.cc/2ZZZ-TKYG>].

116. See *Virtual World/MMO Radar Chart: Slideshare Presentation*, KZERO WORLDSWIDE, www.kzero.co.uk/blog/virtual-worldmmo-radar-chart-slideshare-presentation [<https://perma.cc/N7SB-XLFN>] (last visited Oct. 24, 2017) (showing a graphical representation of the virtual world universe by age of users, category, and development status).

117. See, e.g., William Sims Bainbridge, *The Scientific Research Potential of Virtual Worlds*, 317 SCIENCE 472, 475 (2007).

118. See Joshua A.T. Fairfield, *Mixed Reality: How the Laws of Virtual Worlds Govern Everyday Life*, 27 BERKELEY TECH. L.J. 55, 59 (2012). Especially noteworthy in this context is the series of *State of Play* conferences, held annually since 2003 at New York University, and the resulting collection of published essays. See generally THE STATE OF PLAY: LAW, GAMES, AND VIRTUAL WORLDS (Jack M. Balkin & Beth Simone Noveck eds., 2006).

119. See, e.g., Jack M. Balkin, *Virtual Liberty: Freedom to Design and Freedom to Play in Virtual Worlds*, 90 VA. L. REV. 2043, 2045–46 (2004); Caroline Bradley & A. Michael Froomkin, *Virtual Worlds, Real Rules*, 49 N.Y.L. SCH. L. REV. 103, 137–38 (2004); Andrew E. Jankowich, *Property and Democracy in Virtual Worlds*, 11 B.U. J. SCI. & TECH. L. 173, 176 (2005); F. Gregory Lastowka & Dan Hunter, *The Laws of the Virtual Worlds*, 92 CALIF. L. REV. 1, 30 (2004); Tal Z. Zarsky, *Information Privacy in Virtual Worlds:*

B. The Virtual Reality Renaissance

Stanley G. Weinbaum's 1935 story *Pygmalion's Spectacles* features a technological invention—goggles that manipulate the senses, placing the wearer in an interactive dream reality.¹²⁰ Other works of science fiction in the 1950s by authors like Stanisław Lem, Ray Bradbury, and Philip K. Dick¹²¹ explored ideas that led to the first applications of virtual reality technology.¹²² Until recently, virtual reality technology was mostly limited to specialized uses like research and training within institutions and dedicated facilities.¹²³ Specialized virtual reality systems typically include input and output devices in three categories: body tracking and visual display, which is how the system and the user *see* one another; sound recognition and aural outputs, allowing both to *hear* one another; and physical controls and haptic feedback, the system and user's means of *feeling*.¹²⁴ Many specialized virtual reality systems incorporate a head-mounted three-dimensional display with audio and positional sensors, a classic virtual reality setup which goes back to the 1960s.¹²⁵

Identifying Unique Concerns Beyond the Online and Offline Worlds, 49 N.Y.L. SCH. L. REV. 231, 237 (2004).

120. See generally STANLEY GRAUMAN WEINBAUM, *PYGMALION'S SPECTACLES* (1935).

121. See generally RAY BRADBURY, *The Veldt*, in *THE ILLUSTRATED MAN* (Simon & Schuster 2012) (1948); PHILIP K. DICK, *EYE IN THE SKY* (Mariner Books 2012) (1957); PHILIP K. DICK, *TIME OUT OF JOINT* (Mariner Books 2012) (1959); STANISŁAW LEM, *THE STAR DIARIES* (Michael Kandel trans., 1976) (1957). On the relationship between science, fiction, and science fiction, see Sheila Schwartz, *Science Fiction: Bridge Between the Two Cultures*, 60 ENG. J. 1043 (1971).

122. See ALAN B. CRAIG ET AL., *DEVELOPING VIRTUAL REALITY APPLICATIONS: FOUNDATIONS OF EFFECTIVE DESIGN* 4–6 (2009); MATJAZ MIHELJ ET AL., *VIRTUAL REALITY TECHNOLOGY AND APPLICATIONS* 5 (2014).

123. CRAIG ET AL., *supra* note 122, at 145, 189. Architects and engineers use virtual reality simulations to test and create designs and prototypes; surgeons train on virtual reality systems and use them in the operating room; psychotherapists use virtual reality environments to treat phobias; and virtual reality is used to educate and teach students and to train technicians, pilots, law enforcement, astronauts, and other professionals. See GRIGORE C. BURDEA & PHILLIPE COIFFET, *VIRTUAL REALITY TECHNOLOGY* 8 (2d ed. 2003); WILLIAM R. SHERMAN & ALAN B. CRAIG, *UNDERSTANDING VIRTUAL REALITY: INTERFACE, APPLICATION, AND DESIGN* 24–25 (2003). One of the major drivers of virtual reality, like many other specialized applied technologies, has been the military. Virtual reality is used by the military for situational training and planning with regards to navigation, tactics, combat systems, infantry training, explosives handling, and others. See BURDEA & COIFFET, *supra*, at 8; CRAIG ET AL., *supra* note 122, at 145; MARIO A. GUTIÉRREZ ET AL., *STEPPING INTO VIRTUAL REALITY* 4, 168 (2008); SHERMAN & CRAIG, *supra*, at 6.

124. See SHERMAN & CRAIG, *supra* note 123, at 72.

125. See, e.g., Ivan E. Sutherland, *A Head-Mounted Three-Dimensional Display*, PROC. JOINT COMPUTER CONF., Dec. 1968, at 757, 758, <https://dl.acm.org/citation.cfm?id=1476686>; see also Samuel Mallick, Note, *Augmenting Property Law*:

Some systems, such as a flight simulator, are built in isolated chambers, often situated on moving platforms, and fitted with panoramic displays and audio.¹²⁶ Another common setup is the CAVE automatic virtual environment (CAVE) system, which utilizes visual and aural projectors in a darkened room, a design developed by researchers at the University of Illinois in the early 1990s.¹²⁷ Specialized virtual reality systems are often custom built, large, relatively stationary, and expensive.¹²⁸

In March 2014, social networking giant Facebook announced the \$2 billion acquisition of affordable virtual reality startup Oculus VR, an announcement that sparked a virtual reality research and development race.¹²⁹ Three years later, nearly every major player on the global technology market is developing and launching affordable virtual reality products and services in what is being termed the “Virtual Reality Renaissance.”¹³⁰ Dozens of companies have announced the development of various types of virtual reality

Applying the Right to Exclude in the Augmented Reality Universe, 19 VAND. J. ENT. & TECH. L. 1057, 1060 (2017).

126. See, e.g., *Information for Real-World Pilots*, MICROSOFT: FLIGHT SIMULATOR, <https://www.microsoft.com/Products/Games/FSInsider/product/Pages/InfoRealworld.aspx> [<https://perma.cc/7G5M-JRBE>] (last visited Jan. 11, 2018). Flight simulators were in fact the first commercial applications of virtual reality concepts, dating back to 1929. See SHERMAN & CRAIG, *supra* note 123, at 24–25.

127. See generally Carolina Cruz-Neira et al., *The CAVE: Audio Visual Experience Automatic Virtual Environment*, 35 COMM. ACM 64, 67 (1992).

128. A commercial flight simulator, for example, is tailored to a specific airplane model and costs millions. British Airways bought in 2013 an Airbus A380 simulator for £10 million—one of sixteen such simulators for different airplane models—that the airline operates for training. See Oliver Smith, *Flight Simulator: At the Helm of an A380*, TELEGRAPH (Apr. 25, 2013, 12:00 AM), www.telegraph.co.uk/travel/travelnews/10018393/Flight-simulator-at-the-helm-of-an-A380.html [<https://perma.cc/NJ6P-ZPJX>].

129. See Press Release, Facebook, Facebook to Acquire Oculus (Mar. 25, 2014), <https://newsroom.fb.com/news/2014/03/facebook-to-acquire-oculus/>; Victor Luckerson, *Facebook Buying Oculus Virtual Reality Company for \$2 Billion*, TIME (Mar. 25, 2014), www.time.com/37842/facebook-oculus-rift [<https://perma.cc/6STU-23ZN>].

130. See, e.g., Julian Chokkattu, *Everything You Need to Know About Google Daydream*, DIGITALTRENDS (May 23, 2017, 4:58 PM), www.digitaltrends.com/virtual-reality/google-daydream-news; Will Freeman, *Playstation VR Review—If This Is the Future of Virtual Reality, Sign Me Up*, GUARDIAN (Oct. 10, 2016, 2:00 AM), www.theguardian.com/technology/2016/oct/10/playstation-vr-virtual-reality-review [<https://perma.cc/654R-J83G>]; Jason Ganz, *The Virtual Reality Renaissance: How Learning in VR Will Inspire Action Like Never Before*, SINGULARITYHUB (Nov. 5, 2015), singularityhub.com/2015/11/05/the-virtual-reality-renaissance-how-learning-in-vr-will-inspire-action-like-never-before [<https://perma.cc/E29H-ZQ9P>]; Lucas Matney, *Review: HTC Vive*, TECHCRUNCH (Apr. 5, 2016), techcrunch.com/2016/04/05/review-htc-vive [<https://perma.cc/U549-UTZJ>]; Lance Ulanoff, *The Virtual Reality Renaissance Is Here, but Are We Ready?*, MASHABLE (Apr. 20, 2014), mashable.com/2014/04/20/virtual-reality-predictions [<https://perma.cc/78RM-BU7U>].

headsets, software, body and hand controllers, treadmills, positional tracking systems, 3D cameras for virtual reality content creation, and many other virtual reality products for the home market.¹³¹ Industry leaders like Facebook, Microsoft, and Google envision public, online, social virtual reality environments where users can behave and interact in ways that are more like the ways people act and relate to others in physical reality.¹³² Financial experts believe that the virtual reality market is set to expand dramatically over the next ten to twenty years.¹³³

The Virtual Reality Renaissance has also begun to garner the interest of legal scholars.¹³⁴ Most notably, in a forthcoming article,

131. See *Q2 2015 Update of the VR Hardware Radar*, KZERO WORLDWIDE, www.kzero.co.uk/blog/q2-2015-update-of-the-vr-hardware-radar [https://perma.cc/K3DW-B9HS] (last visited Oct. 24, 2017).

132. See Mike Elgan, Opinion, *Why Virtual Reality Is the Next Social Network*, COMPUTERWORLD (Nov. 2, 2015, 3:00 AM), www.computerworld.com/article/2999819/social-media/why-virtual-reality-is-the-next-social-network.html [https://perma.cc/ARE3-HYAS]; Mark Hachman, *The New Space VR App Makes Microsoft's Vision of a Virtual HoloLens Office a Reality—Now*, PCWORLD (July 11, 2016, 12:59 PM), www.pcworld.com/article/3093378/virtual-reality/the-new-space-vr-app-makes-microsofts-vision-of-a-virtual-hololens-office-a-realitynow.html [https://perma.cc/SP42-93ZF]; David Meyer, *How Google Is Trying to Make Virtual Reality Safely Social*, FORTUNE (Aug. 10, 2016), fortune.com/2016/08/10/google-virtual-reality-social [https://perma.cc/8VYA-ESC8]; Alfred Ng, *Facebook Shows How It's Gonna Make Virtual Reality Social*, CNET (Oct. 6, 2016, 12:08 PM), www.cnet.com/news/facebook-mark-zuckerberg-shows-off-live-vr-virtual-reality-chat-with-oculus-rift [https://perma.cc/4NPM-CY8S]; *infra* Part V.C.

133. Goldman Sachs Global Investment Research analysts estimate the virtual reality market at \$80 billion by 2025, with 300 million virtual reality units sold. See HEATHER BELLINI ET AL., GOLDMAN SACHS, *VIRTUAL & AUGMENTED REALITY: UNDERSTANDING THE RACE FOR THE NEXT COMPUTING PLATFORM 8* (2016), <http://www.goldmansachs.com/our-thinking/pages/technology-driving-innovation-folder/virtual-and-augmented-reality/report.pdf> [https://perma.cc/SA9P-N9F2]. Citibank, moreover, predicts that the virtual reality market will reach \$1 trillion by 2035. Luke Graham, *Citi Eyes a Trillion-Dollar Industry in Virtual Reality Technology*, CNBC (Oct. 14, 2016, 10:38 AM), www.cnbc.com/2016/10/14/citi-eyes-a-trillion-dollar-industry-in-virtual-reality-technology.html [https://perma.cc/9Z5B-V862]. Gartner's Hype Cycle for Emerging Technologies 2016, an industry measure of technology readiness, predicts widespread virtual reality adoption in as little as five to ten years. Press Release, Gartner, *Gartner's 2016 Hype Cycle for Emerging Technologies Identifies Three Key Trends That Organizations Must Track to Gain Competitive Advantage* (Aug. 16, 2016), www.gartner.com/newsroom/id/3412017 [https://perma.cc/KF93-DP9D].

134. See, e.g., THE LAW OF VIRTUAL AND AUGMENTED REALITY (Woodrow Barfield & Marc Blitz eds., forthcoming 2018); Roya Bagheri, *Virtual Reality: The Real Life Consequences*, 17 U.C. DAVIS BUS. L.J. 101, 108–09 (2016) (discussing potential legal issues in the virtual reality fields and how to deal with them); Marc Jonathan Blitz, *Freedom of 3D Thought: The First Amendment in Virtual Reality*, 30 CARDOZO L. REV. 1141, 1164–66 (2008) (outlining how the First Amendment and virtual reality interact); Jaclyn Seelagy, *Virtual Violence*, 64 UCLA L. REV. DISCOURSE 412, 417 (2016) (considering the legal ramifications of virtual violence); Gilad Yadin, *Virtual Reality Intrusion*, 53 WILLAMETTE L. REV. 63, 97 (2016) [hereinafter Yadin, *Virtual Reality Intrusion*] (suggesting courts use

Mark Lemley and Eugene Volokh highlight several diverse legal issues that may be relevant to virtual reality technology in the context of criminal law, criminal jurisdiction, tort law, privacy, and speech.¹³⁵ The interest of prominent legal scholars in virtual reality gives this budding field of study significant legitimacy. However, their work does not aim to present definitive normative conclusions but rather to identify relevant questions.¹³⁶ Lemley and Volokh's general stance seems to be one of moderate cyberspace exceptionalism in line with mainstream contemporary cyberlaw theory: they favor consent-based architectural solutions, like self-help and limited liability, except in cases where virtual reality behavior seriously impacts real-life legal interests.¹³⁷ This Article takes a markedly less cautious approach, arguing that virtual reality technology challenges the exceptionalistic foundation of cyberlaw.

C. *The Subjective Effects of Virtual Reality*

Virtual reality is a psychotechnological¹³⁸ means of manipulating perception via false sensory cues. Unsurprisingly, the technology has been of great interest to cognitive and social psychologists. Virtual reality psychology research is a well-established experimental field of study with a substantial body of published work.¹³⁹ Human perception is the result of an active mental process; the mind receives cues from various sensory sources and synthesizes them using memory and association to form a consistent internal model of the world.¹⁴⁰ Researchers disagree on whether the mind directly processes sensory cues or whether it forms a working

older common law doctrines of trespass and burglary to solve problems of virtual reality intrusion); Gilad Yadin, *Virtual Reality Surveillance*, 35 CARDOZO ARTS & ENT. L.J. 707, 709 (2017) [hereinafter Yadin, *Virtual Reality Surveillance*].

135. See Mark A. Lemley & Eugene Volokh, *Law, Virtual Reality, and Augmented Reality*, 166 U. PA. L. REV. (forthcoming 2018) (manuscript at 4–5), <https://ssrn.com/abstract=2933867>.

136. See *id.* at 5, 82.

137. See *id.* at 35–37.

138. Psychotechnology is “the application of psychological methods and results to the solution of practical problems.” *Psychotechnology*, MERRIAM-WEBSTER, www.merriam-webster.com/medical/Psychotechnology [<https://perma.cc/HSR8-JDES>] (last visited Jan. 11, 2018).

139. For a detailed literature review, see Jesse Fox et al., *Virtual Reality: A Survival Guide for the Social Scientist*, 21 J. MEDIA PSYCHOL. 95, 96 (2009). See also Barbara O. Rothbaum, *Using Virtual Reality to Help Our Patients in the Real World*, 26 DEPRESSION & ANXIETY 209, 209 (2009).

140. See JAMES JEROME GIBSON, *THE PERCEPTION OF THE VISUAL WORLD* 13 (1950).

hypothesis of perception and uses sensory cues to test it.¹⁴¹ Regardless of the exact mechanism at work, it is widely accepted that the process of perception, particularly visual perception, involves a considerable amount of unconscious mental guesswork or “perceptual filling-in”: the maintenance of an internal spatial model of the world based on incomplete sensory stimuli.¹⁴² Manipulating this system is a matter of replacing real sensory cues with simulated cues, even rough ones, and tricking the mind into creating and maintaining an artificial perception model and the subjective feeling of being *present* elsewhere. Virtual reality technology does exactly that.¹⁴³ To emphasize, virtual reality does not need to be indistinguishable from physical reality to be effective; far from it—provide enough sensory cues and the human mind will do the rest.

Presence is, therefore, the key psychotechnological element of virtual reality.¹⁴⁴ Scholarly interest in presence has been growing in recent years to the point that it is now considered by many a multidisciplinary field of study in its own right.¹⁴⁵ What does presence feel like?¹⁴⁶ It is actually a very natural human experience. The

141. This is a discussion which has been going on for years among perception researchers. *See generally* JAMES J. GIBSON, *THE SENSES CONSIDERED AS PERCEPTUAL SYSTEMS* (1966) (describing the theory of direct perception (or ecological) theory); R.L. GREGORY, *THE INTELLIGENT EYE* (1970) (describing the perception as hypothesis (or constructivist) theory); Joel Norman, *Two Visual Systems and Two Theories of Perception: An Attempt to Reconcile the Constructivist and Ecological Approaches*, 25 *BEHAV. & BRAIN SCIS.* 73 (2002) (arguing that the mind actually uses both ecological and constructive methods).

142. *See* Rimona S. Weil & Geraint Rees, *A New Taxonomy for Perceptual Filling-In*, 67 *BRAIN RES. REVS.* 40, 41 (2011).

143. *See* Julia Diemer et al., *The Impact of Perception and Presence on Emotional Reactions: A Review of Research in Virtual Reality*, *FRONTIERS PSYCHOL.*, Jan. 2015, at 1, 1–2; Maria V. Sanchez-Vives & Mel Slater, *From Presence to Consciousness Through Virtual Reality*, 6 *NATURE REVS. NEUROSCI.* 332, 333 (2005); Martijn J. Schuemie et al., *Research on Presence in Virtual Reality: A Survey*, 4 *CYBERPSYCHOL. & BEHAV.* 183, 187 (2001).

144. *See* Jonathan Steuer, *Defining Virtual Reality: Dimensions Determining Telepresence*, 42 *J. COMM.* 73, 73 (1992).

145. *See, e.g.,* INT’L SOC’Y FOR PRESENCE RES., <http://ispr.info> [<https://perma.cc/2LRF-TPC5>] (last visited Oct. 25, 2017); Janet Weisenberger & Roy Ruddle, *Presence: Teleoperators and Virtual Environments*, *MIT PRESS JOURNALS*, <http://www.mitpressjournals.org/loi/pres> [<https://perma.cc/7CPA-EYAW>] (last visited Jan. 12, 2018).

146. The term “presence” is commonly used to describe a psychological state of consciousness, while a similar term—“immersion”—is used to describe the effect of a computerized virtual reality system. *See* Mel Slater et al., *Immersion, Presence, and Performance in Virtual Environments: An Experiment with Tri-Dimensional Chess 1–3* (1996) (unpublished manuscript), <http://citeseerx.ist.psu.edu/viewdoc/similar?doi=10.1.1.34.6594&type=cc>. Users are present, while systems are immersive. *Id.* Social science virtual reality literature—in the fields of psychology and communications,

mechanism of rapid eye movement (REM) sleep dreaming is similar to the virtual reality experience—the mind closes off external stimuli and provides simulated sensory cues designed to facilitate presence in a dream reality.¹⁴⁷ It is the ability to create presence, the feeling of being present elsewhere using technology, that makes virtual reality psychologically unique. Other experiences, such as browsing a website, watching a movie, or reading this Article, can be engaging—bringing about focus and concentration—but they do not create the psychological state of being present in a different place.¹⁴⁸ Virtual reality environments strive to be as close as possible to physical environments; for the subjective mind of users present in a simulated environment, virtual reality is in that moment their only reality.¹⁴⁹

Presence has a social aspect. Virtual reality users form an awareness of others and of being in the company of others, as well as a perceived ability to assess others and to act on that assessment.¹⁵⁰

for example—tends to use the term “presence” while engineering and computer science literature uses “immersion.” *Id.* at 3.

147. See J. Allan Hobson et al., *Virtual Reality and Consciousness Inference in Dreaming*, FRONTIERS PSYCHOL., Oct. 2014, at 1, 1. A similar process is thought to be abnormally at work in the case of psychoses such as schizophrenia. See Anil K. Seth et al., *An Interoceptive Predictive Coding Model of Conscious Presence*, FRONTIERS PSYCHOL., Jan. 2012, at 1, 2.

148. See GERARD JOUNGHYUN KIM, DESIGNING VIRTUAL REALITY SYSTEMS 4–8 (2005); Shamus Smith et al., *Drowning in Immersion*, 1998 PROCS. UK-VRSIG 1, 1–3 (1998). *But see* Steuer, *supra* note 144, at 79 (“Newspapers, letters, and magazines place the reader in a space in which the writer is telling a story[.]”).

149. See KEVIN KELLY, THE INEVITABLE: UNDERSTANDING THE 12 TECHNOLOGICAL FORCES THAT WILL SHAPE OUR FUTURE 211–13 (2016); Corey J. Bohil et al., *Virtual Reality in Neuroscience Research and Therapy*, 12 NATURE REV. NEUROSCI. 752, 752 (2011); Matthew Lombard & Theresa Ditton, *At the Heart of It All: The Concept of Presence*, J. COMPUTER-MEDIATED COMM., Sept. 1997, at 1, 1; *When Virtual Reality Feels Real*, SCIENCEDAILY, (May 13, 2009), <https://www.sciencedaily.com/releases/2009/05/090511091727.htm> [<https://perma.cc/D7RD-9QE9>] (summarizing results of a series of experiments showing real physical effects of virtual reality presence).

150. See Frank Biocca et al., *Toward a More Robust Theory and Measure of Social Presence: Review and Suggested Criteria*, 12 PRESENCE 456, 472 (2003); Brian E. Mennecke et al., *An Examination of a Theory of Embodied Social Presence in Virtual Worlds*, 42 DECISION SCIS. 413, 417 (2011); Kristine L. Nowak & Frank Biocca, *The Effect of the Agency and Anthropomorphism on Users’ Sense of Telepresence, Copresence, and Social Presence in Virtual Environments*, 12 PRESENCE 481, 482 (2003); S. Parsons & P. Mitchell, *The Potential of Virtual Reality in Social Skills Training for People with Autistic Spectrum Disorders*, 46 J. INTELL. DISABILITY RES. 430, 436–37 (2002); Giuseppe Riva et al., *Affective Interactions Using Virtual Reality: The Link Between Presence and Emotions*, 10 CYBERPSYCHOL. & BEHAV. 45, 46 (2007); Ralph Schroeder, *Social Interaction in Virtual Environments: Key Issues, Common Themes, and a Framework for Research*, in THE SOCIAL LIFE OF AVATARS: PRESENCE AND INTERACTION IN SHARED VIRTUAL ENVIRONMENTS 1,

This awareness leads virtual reality users to behave in ways which suggest that they have imported real-world social conventions and morality into the virtual reality environment. Researchers have replicated social and moral dilemma experiments with well-established real-world results in virtual reality and found that the results remain consistent.¹⁵¹ In fact, experimental behavioral studies using virtual reality models are considered a viable research methodology in moral psychology and particularly useful in situations where a real-world study would be impossible to conduct.¹⁵² From a legal perspective, the fact that virtual reality users import real-world social and moral norms into the simulated environment is especially interesting. The connections between law, society, and morality are a subject of prolific discussion among legal philosophers.¹⁵³ Despite their differences, most legal theorists will likely agree that where there are social and moral norms, law—or at the very least, a legal expectation—is liable to be present.

13–15 (Ralph Schroeder ed., 2002); Shanyang Zhao, *Toward a Taxonomy of Copresence*, 12 PRESENCE 445, 450–51 (2003).

151. See Barbara Becker & Gloria Mark, *Social Conventions in Computer-Mediated Communication: A Comparison of Three Online Shared Virtual Environments*, in THE SOCIAL LIFE OF AVATARS, *supra* note 150, at 19, 22 (finding that users import social conventions into the virtual environment); Jim Blascovich, *Social Influence Within Immersive Virtual Environments*, in THE SOCIAL LIFE OF AVATARS, *supra* note 150, at 127, 128 (providing a model of social influence within digital immersive virtual environments); Indrajeet Patil et al., *Affective Basis of Judgment-Behavior Discrepancy in Virtual Experiences of Moral Dilemmas*, 9 SOC. NEUROSCI. 94, 106 (2014) (finding virtual reality behavior similar to real life and different than textual representation when faced with moral dilemmas); Mel Slater et al., *A Virtual Reprise of the Stanley Milgram Obedience Experiments*, PLOS ONE, Dec. 2006, at 1, 5–6, [journals.plos.org/plosone/article?id=10.1371/journal.pone.0000039](https://doi.org/10.1371/journal.pone.0000039) [<https://perma.cc/5YLV-WZ7J>] (reconstructing the Milgram obedience experiments in virtual reality and finding similar behavior to real life).

152. See Cécile Cristofari & Matthieu J. Guitton, *Surviving at Any Cost: Guilt Expression Following Extreme Ethical Conflicts in a Virtual Setting*, PLOS ONE, July 2014, at 1, 5–6, [journals.plos.org/plosone/article?id=10.1371/journal.pone.0101711](https://doi.org/10.1371/journal.pone.0101711) [<https://perma.cc/T66C-ZZQN>] (finding significant expressions of guilt after ethically questionable survival actions in a virtual reality zombie apocalypse); Doron Friedman et al., *A Method for Generating an Illusion of Backwards Time Travel Using Immersive Virtual Reality—An Exploratory Study*, FRONTIERS PSYCHOL., Sept. 2014, at 1, 2 (placing subjects in a virtual reality time travel moral dilemma situation); C. David Navarrete et al., *Virtual Morality: Emotion and Action in a Simulated Three-Dimensional “Trolley Problem”*, 12 EMOTION 364, 368 (2012) (finding that subjects behaved in a utilitarian manner when faced with a classic moral dilemma involving the death of innocents in virtual reality).

153. See generally LON L. FULLER, THE MORALITY OF LAW (rev. ed. 1969) (arguing that morality is one of the fundamentals of law); H.L.A. HART, THE CONCEPT OF LAW (3d ed. 2012) (laying the basis for legal positivism by arguing that law is not a product of morality but rather of social norms).

Finally, presence also has a spatial aspect. Virtual reality users gain a specific perception of being physically situated within a geometrical spatial environment.¹⁵⁴ This element of presence makes virtual reality an effective training platform for spatial tasks, as spatial skills gained in virtual reality carry over extremely well to the real world.¹⁵⁵ Brain imaging studies show that presence works on a deep cognitive level, manipulating the conscious mind of users into believing that they are actually navigating an alternate spatial reality.¹⁵⁶ This is another characteristic of virtual reality environments which bears legal significance. Spatiality is a component of various legal doctrines. Prosecution of some criminal offenses, for example, requires a spatial act such as entering a place.¹⁵⁷ Fourth Amendment protection, another example, is most often attached to geographical locations.¹⁵⁸

Legal scholarship has had little opportunity to take an interest in presence or in its social and spatial aspects.¹⁵⁹ Virtual worlds, with their two-dimensional interfaces, are incapable of inducing true presence. Specialized virtual reality systems are not mainstream enough to warrant much legal attention, and the affordable virtual reality devices market is in its infancy. Lemley and Volokh's important recent work, for instance, does not go beyond describing the effects of presence as background for their legal analysis.¹⁶⁰ The next

154. See Thomas Baumgartner et al., *Neural Correlate of Spatial Presence in an Arousing and Noninteractive Virtual Reality: An EEG and Psychophysiology Study*, 9 CYBERPSYCHOL. & BEHAV. 30, 30 (2006); Saniye Tugba Bulu, *Place Presence, Social Presence, Co-Presence, and Satisfaction in Virtual Worlds*, 58 COMPUTERS & EDUC. 154, 155 (2012); Sanchez-Vives & Slater, *supra* note 143, at 332; Thomas W. Schubert, *A New Conception of Spatial Presence: Once Again, with Feeling*, 19 COMM. THEORY 161, 161 (2009); Werner Wirth et al., *A Process Model of the Formation of Spatial Presence Experiences*, 9 MEDIA PSYCHOL. 493, 494 (2007).

155. See James P. Bliss et al., *The Effectiveness of Virtual Reality for Administering Spatial Navigation Training to Firefighters*, 6 PRESENCE 73, 75 (1997); Neal E. Seymour et al., *Virtual Reality Training Improves Operating Room Performance: Results of a Randomized, Double-Blinded Study*, 236 ANNALS SURGERY 458, 462 (2002); David Waller et al., *The Transfer of Spatial Knowledge in Virtual Environment Training*, 7 PRESENCE 129, 141 (1998).

156. See Daniel S. Pine et al., *Neurodevelopmental Aspects of Spatial Navigation: A Virtual Reality fMRI Study*, 15 NEUROIMAGE 396, 396 (2002).

157. See, e.g., RONALD J. BACIGAL & MARY KELLY TATE, CRIMINAL LAW & PROCEDURE: AN OVERVIEW 111 (4th ed. 2015); MIKE MOLAN ET AL., MODERN CRIMINAL LAW 300 (5th ed. 2003).

158. See Baude & Stern, *supra* note 102, at 1834; Christopher Slobogin, *Technologically-Assisted Physical Surveillance: The American Bar Association's Tentative Draft Standards*, 10 HARV. J.L. & TECH. 383, 390–98 (1997).

159. *But see* Yadin, *Virtual Reality Intrusion*, *supra* note 134, at 66–67; Yadin, *Virtual Reality Surveillance*, *supra* note 134, at 710.

160. See Lemley & Volokh, *supra* note 135, at 9–11.

Parts of the Article will present the novel argument that the emergence of virtual reality technology may have a dramatic effect on cyberspace exceptionalism and cyberlaw theory—an argument based on the social and spatial aspects of virtual reality presence.

V. CYBERSPACE AS VIRTUAL REALITY

Associated with the cyberspace exceptionalism debate is a line of legal scholarship focusing on the metaphorical conception of cyberspace as a spatial alternate reality. Legal literature has only indirectly addressed a second metaphorical conception—that of cyberspace as a realistic social space. These conceptions bring to mind virtual reality technology with its spatial and social cognitive effects, suggesting a conceptualization of *cyberspace as virtual reality*.¹⁶¹ This notion is supported by philosophical work that links cyberspace and virtual reality as similar technological expressions of humanity's long-held desire to break out of the limitations of the physical body and the natural world. Until recently, this conceptualization was purely theoretical; the Virtual Reality Renaissance has made it concrete. Virtual reality applications like the recent Facebook Spaces connects millions of people in online virtual reality environments, producing a virtual reality cyberspace.¹⁶² The virtual reality cyberspace creates a subjective experience of spatial, social, and moral reality that parallels the real world, calling for a parallel normative reality. In other words, the virtual reality cyberspace is legally unexceptional. This conclusion leads to the dramatic argument that virtual reality technology may undermine the theoretical exceptionalistic foundation of cyberlaw.

A. *Cyberspace as a Metaphorical Spatial/Social Reality*

The spatial conceptualization of cyberspace as a geographical place is an element of both exceptionalism and unexceptionalism theory which still plays a part in academic discourse following Lessig's influential work.¹⁶³ While the semantics of the term "cyberspace" explicitly encourage a spatial perception, this perception is considered more metaphorical than analogous.¹⁶⁴ Metaphors are a staple of human thinking: humans understand complicated things by

161. See *infra* Part V.B.

162. See *infra* Part V.C.

163. See Cohen, *supra* note 13, at 211–12, 216–19, 222; Edward Soja, *Afterword*, 48 STAN. L. REV. 1421, 1426 (1996); see also LESSIG, *supra* note 41, at 84.

164. See Colin Crawford, *Cyberplace: Defining a Right to Internet Access Through Public Accommodation Law*, 76 TEMP. L. REV. 225, 228–31 (2003).

comparing them to other, familiar things.¹⁶⁵ The metaphorical spatial perception of cyberspace in particular is seen by psychologists as universal and natural, the action of a human cognitive mechanism of coping with the interactivity and complexity of an intangible medium.¹⁶⁶ From a technological point of view, spatial metaphors can help users utilize the Internet.¹⁶⁷ Judicial use of the spatial cyberspace metaphor, however, has provoked vigorous scholarly criticism.¹⁶⁸ Critics argue that the metaphor can distort judicial reasoning and produce doctrinally undesirable results.¹⁶⁹

With regards to cyberspace, psychologists identify a second metaphor at play—people experience cyberspace as a metaphorical realistic social space.¹⁷⁰ Even mediated through relatively limited means of communication like email or instant messages, people form intense emotional connections, feeling that cyberspace allows them to somehow connect directly to the mind of others, know them, and be known on a deep level.¹⁷¹ The cyberspace social metaphor leads to the prevalence of online personal engagements: online dating, online interpersonal relationships, online sex, and group behavior.¹⁷² These

165. See George Lakoff & Mark Johnson, *Metaphors We Live By*, in *THE PRODUCTION OF REALITY: ESSAYS AND READING ON SOCIAL INTERACTION* 115, 115 (Jodi O'Brien ed., 6th ed. 2017).

166. See JANET H. MURRAY, *HAMLET ON THE HOLODECK: THE FUTURE OF NARRATIVE IN CYBERSPACE* 80 (1997); Azy Barak & John Suler, *Reflections on the Psychology and Social Science of Cyberspace*, in *PSYCHOLOGICAL ASPECTS OF CYBERSPACE: THEORY, RESEARCH, APPLICATIONS* 1, 3 (Azy Barak ed., 2008); Giuseppe Riva & Carlo Galimberti, *The Psychology of Cyberspace: A Socio-Cognitive Framework to Computer-Mediated Communication*, 15 *NEW IDEAS PSYCHOL.* 141, 141–43 (1997); see also Dan Hunter, *Cyberspace as Place and the Tragedy of the Digital Anticommons*, 91 *CALIF. L. REV.* 439, 469–75 (2003) (discussing the concept of cyberspace as place metaphor and its undesirable consequences in relation to private control).

167. See Hanhwe Kim & Stephen C. Hirtle, *Spatial Metaphors and Disorientation in Hypertext Browsing*, 14 *BEHAV. & INFO. TECH.* 239, 239–40 (1995).

168. See Cohen, *supra* note 13, at 210–11. For an example of judges invoking this metaphor, see *Reno v. ACLU*, 521 U.S. 844, 890 (1997) (O'Connor, J., concurring in the judgment in part).

169. See Daniel Benoliel, *Law, Geography and Cyberspace: The Case of On-Line Territorial Privacy*, 23 *CARDOZO ARTS & ENT. L.J.* 125, 151–52 (2005); James Boyle, *The Second Enclosure Movement and the Construction of the Public Domain*, 66 *LAW & CONTEMP. PROBS.* 33, 37–39 (2003); Epstein, *supra* note 40, at 82–83; Hunter, *supra* note 166, at 445, 458–59; Mark A. Lemley, *Place and Cyberspace*, 91 *CALIF. L. REV.* 521, 527–29 (2003); Timothy Wu, *When Law & the Internet First Met*, 3 *GREEN BAG 2D* 171, 177 (2000); Jonathan H. Blavin & I. Glenn Cohen, Note, *Gore, Gibson, and Goldsmith: The Evolution of Internet Metaphors in Law and Commentary*, 16 *HARV. J.L. & TECH.* 265, 267 (2002).

170. See Barak & Suler, *supra* note 166, at 3, 5–7.

171. See *id.* at 3, 6–7; see also Andrea J. Baker, *Down the Rabbit Hole: The Role of Place in the Initiation and Development of Online Relationships*, in *PSYCHOLOGICAL ASPECTS OF CYBERSPACE*, *supra* note 166, at 163, 163.

172. See Baker, *supra* note 171, at 163; Barak & Suler, *supra* note 166, at 6–7.

are associated with the metaphorical spatial perception of cyberspace because interpersonal connections are often linked to physical or perceived places.¹⁷³ Legal literature had indirectly addressed the social cyberspace metaphor, primarily as an unexceptionalist device, supporting the argument that the social similarities between cyberspace and real life negate some of the normative disparities between these two fields of human behavior.¹⁷⁴

B. Cyberspace as a Conceptual Virtual Reality

Human psychology induces, even compels, the conceptualization of cyberspace in metaphorical spatial and social terms.¹⁷⁵ This fact is particularly interesting when considering virtual reality. Virtual reality technology facilitates presence and with it subjective sociality and subjective spatiality.¹⁷⁶ The subjective spatial and social cognitive effects of virtual reality technology parallel the metaphorical spatial and social perceptions of cyberspace. This conceptual link is not coincidental.

The concept of cyberspace was preceded and influenced by virtual reality. In 1965, the height of computer technology was the IBM System/360, a room-sized computer that would not match the computing power of a current flash drive microprocessor.¹⁷⁷ That same year, computer scientist Ivan Sutherland, the so-called father of virtual reality systems,¹⁷⁸ published a short paper titled *The Ultimate Display* in which he explained how, one day, computers will be used to create interactive artificial realities.¹⁷⁹ Twenty years passed before the term “cyberspace” first appeared in science fiction literature, and even then it was used to describe a technology that sounds more like

173. See Baker, *supra* note 171, at 163–64.

174. See generally Cohen, *supra* note 13 (arguing that cyberspace should be viewed as a complex social space, an extension of everyday practice); Strandburg, *supra* note 40 (arguing for Fourth Amendment technosocial continuity); Alfred C. Yen, *Western Frontier or Feudal Society?: Metaphors and Perceptions of Cyberspace*, 17 BERKELEY TECH. L.J. 1207 (2002) (comparing cyberspace social structure to feudal social structure).

175. See Barak & Suler, *supra* note 166, at 3; Hunter, *supra* note 166, at 472–75.

176. See *supra* Part IV.C.

177. See Rhuaridh Marr, *To the Moon and Back on 4KB of Memory*, METROWEEKLY (July 24, 2014), <http://www.metroweekly.com/2014/07/to-the-moon-and-back-on-4kb-of-memory/> [https://perma.cc/HUX7-ERZM] (“IBM’s mainframes, at their fastest, could rival a store bought USB stick today for their computational prowess.”); *System/360 Announcement*, IBM (Apr. 7, 1964), http://www-03.ibm.com/ibm/history/exhibits/mainframe/mainframe_PR360.html [https://perma.cc/4N8L-3SF7].

178. See GUTIÉRREZ ET AL., *supra* note 123, at 5.

179. See Ivan E. Sutherland, *The Ultimate Display*, in 1 INFORMATION PROCESSING 1965: PROCEEDINGS OF IFIP CONGRESS 506, 507 (Wayne A. Kalenich ed., 1965).

virtual reality than the Internet.¹⁸⁰ Until the mid-1990s, “cyberspace” and “virtual reality” were still used interchangeably.¹⁸¹ The current use of “cyberspace” as more or less synonymous with “Internet” is relatively new.¹⁸²

Philosophers of technology suggest that cyberspace, like virtual reality, is a concept that involves the human state of being in a space that exists beyond everyday bodily experience,¹⁸³ a technological expression of humanity’s desire to break out of the limitations of the physical body and the natural world to a controllable environment with endless potential and possibilities.¹⁸⁴ The early theoretical basis for this conception can be traced back to mind-body dualism: seventeenth-century philosopher René Descartes’s notion that the mind can work, apart from the body, to constitute a full subjective, alternate reality.¹⁸⁵ Both cyberspace and virtual reality are metaphysical concepts that describe an aspiration for a subjective cognitive experience beyond physical reality.¹⁸⁶ The conception of virtual reality advances this aspiration by directly affecting cognition, while the contemporary conception of cyberspace relies on metaphor.¹⁸⁷ Ultimately, cyberspace can be seen as a more abstract

180. See WILLIAM GIBSON, *NEUROMANCER* 69 (1984) (coining the term “cyberspace” and defining it as a “consensual hallucination”).

181. W. Lambert Gardiner, *Virtual Reality/Cyberspace: Challenges to Communication Studies*, 18 *CANADIAN J. COMM.* 387 (1993), <http://www.cjc-online.ca/index.php/journal/article/view/762/668> [<https://perma.cc/H74V-4NXJ>]; see, e.g., Thomas W. Valente & Thierry Bardini, *Virtual Diffusion or an Uncertain Reality: Networks, Policy, and Models for the Diffusion of VR Technology*, in *COMMUNICATION IN THE AGE OF VIRTUAL REALITY* 303, 313–14 (Frank Biocca & Mark R. Levy eds., 1995).

182. See, e.g., NAT’L SEC. PRESIDENTIAL DIRECTIVE, NSPD-54, HOMELAND SEC. PRESIDENTIAL DIRECTIVE, HSPD-23, ¶ 7(g) (2008), <https://epic.org/privacy/cybersecurity/EPIC-FOIA-NSPD54.pdf> [<https://perma.cc/58JV-APS4>] (defining cyberspace as “the interdependent network of information technology infrastructures, [including] the Internet, telecommunications networks, computer systems, and embedded processors and controllers”).

183. See JOS DE MUL, *CYBERSPACE ODYSSEY: TOWARDS A VIRTUAL ONTOLOGY AND ANTHROPOLOGY* 147 (2010).

184. See *id.* at 152–53; see also MICHAEL HEIM, *VIRTUAL REALISM* 143–44 (1998).

185. See Howard Robinson, *Dualism*, *STAN. ENCYCLOPEDIA PHIL.*, plato.stanford.edu/archives/fall2003/entries/dualism [<https://perma.cc/9KXM-53QX>] (last visited Jan. 16, 2018). See generally MARLEEN ROZEMOND, *DESCARTES’S DUALISM* (1998) (explaining the nature of Descartes’s dualism). On a legal side note, mind-body dualism is strongly embodied in modern doctrines of intellectual property. See generally Dan L. Burk, *Feminism and Dualism in Intellectual Property*, 15 *AM. U. J. GENDER & SOC. POL’Y & L.* 183, 186 (2007).

186. See GUTIÉRREZ ET AL., *supra* note 123, at 5; Derek Stanovsky, *Virtual Reality*, in *THE BLACKWELL GUIDE TO THE PHILOSOPHY OF COMPUTING AND INFORMATION* 167, 167 (Luciano Floridi ed., 2004).

187. See MICHAEL HEIM, *THE METAPHYSICS OF VIRTUAL REALITY* 77–80 (1993).

concept, further removed from humanity's intellectual quest to escape its physical limitations.¹⁸⁸ Cyberspace can therefore be logically conceptualized as a form of virtual reality.

Specialized virtual reality systems developed mostly independent from the Internet;¹⁸⁹ until recently, the conceptualization of cyberspace as virtual reality was purely theoretical. The Virtual Reality Renaissance—the emergence of home virtual reality devices and connected, social virtual reality environments—has made this notion concrete and legally significant.

C. Cyberspace as a Concrete Virtual Reality

In April 2017, Facebook launched Spaces, a virtual reality application that integrates with the Facebook social network.¹⁹⁰ Using a \$400 virtual reality system, any of the social network's two billion worldwide users can now access content and interact with graphical representations of social contacts in a three-dimensional spatial environment that can either be imaginary or a simulation of an existing physical place.¹⁹¹ According to Facebook, this just scratches the surface of its social virtual reality technology plans.¹⁹² Other online, social virtual reality platforms are in late-stage development.¹⁹³ This evolution is in line with long-term predictions of a gradual move to social virtual reality environments.¹⁹⁴

188. *See id.* at 80.

189. *See supra* Part IV.B.

190. *See* Nicole Lee, *Facebook Spaces Finally Delivers on Social VR*, ENGADGET (Apr. 18, 2017), <https://www.engadget.com/2017/04/18/facebook-spaces-hands-on/> [<https://perma.cc/EH9P-NFGW>]; Lucas Matney, *Facebook Launches Beta of Spaces, Its Goofy and Fun Social VR Platform*, TECHCRUNCH (Apr. 18, 2017), https://techcrunch.com/2017/04/18/facebook-launches-beta-of-spaces-its-goofy-and-fun-social-vr-platform [<https://perma.cc/67KX-83GP>]; Peter Rubin, *Facebook's Bizarre VR App Is Exactly Why Zuck Bought Oculus*, WIRED (Apr. 18, 2017, 1:41 PM), https://www.wired.com/2017/04/facebook-spaces-vr-for-your-friends [<https://perma.cc/M8NX-TPBQ>].

191. Jonathan Vanian, *Facebook Is Slashing the Price of Oculus Rift VR Headset Again*, FORTUNE (July 10, 2017), fortune.com/2017/07/10/facebook-oculus-rift-summer-sale [<https://perma.cc/TND4-N9H5>].

192. *See* Rachel Franklin, *Facebook Spaces: A New Way to Connect with Friends in VR*, FACEBOOK (Apr. 18, 2017), https://newsroom.fb.com/news/2017/04/facebook-spaces.

193. *See, e.g.*, Cameron Faulkner & Joe Osborne, *Google Daydream News, Features and Everything You Need to Know*, TECHRADAR (Nov. 14, 2017), www.techradar.com/news/phone-and-communications/mobile-phones/android-vr-release-date-news-features-1321245 [<https://perma.cc/LEE4-2DHM>].

194. *See* EDWARD CASTRONOVA, EXODUS TO THE VIRTUAL WORLD: HOW ONLINE FUN IS CHANGING REALITY 63 (2007).

Cyberspace may be evolving into a global, social, spatial virtual reality environment, but this process is at its early stages. Furthermore, there is no guarantee that, years hence, virtual reality will completely supplant the familiar two-dimensional cyberspace. Nevertheless, the conceptual notion of cyberspace as virtual reality may be considered concrete even now. The real world is always spatial and social, but real-world human behavior is not. People often engage in activities that do not involve actively moving through navigable space, like reading a book, watching a movie, or just relaxing; they are also, sometimes, merely by themselves. Likewise, cyberspace does not have to simulate the real world, with its social and spatial characteristics, fully and continuously in order to provide a virtual reality experience—it is enough that it can do so when spatial and social action is required. A wide perspective on the continuum of human behavior in the virtual reality cyberspace is particularly suitable for the law, as its primary focus is affecting behavior and behavioral attitudes.¹⁹⁵

D. The Unexceptional Virtual Reality Cyberspace

Legal exceptionalism posits that a technology can be considered legally exceptional when its introduction into the mainstream necessitates systemic legal change in order to preserve or displace an existing balance of values.¹⁹⁶ Usually, exceptional technologies make a social impact that drives legal change.¹⁹⁷ Virtual reality technology is certainly positioned to make a social impact;¹⁹⁸ it may, therefore, seem legally exceptional—or at least potentially so. However, the fact that virtual reality technology is designed to effect the subjective feeling of being in a seemingly real, spatial, social environment makes it, perhaps counterintuitively, legally unexceptional.

Virtual reality users feel on a deep cognitive level that they are present in a navigable spatial environment; they project their social and moral values into this environment, and with them, their legal expectations.¹⁹⁹ Protecting reasonable expectations is central to many legal doctrines; some theorists argue that it is the norm that generates

195. See Kenworthy Bilz & Janice Nadler, *Law, Moral Attitudes, and Behavioral Change*, in THE OXFORD HANDBOOK OF BEHAVIORAL ECONOMICS AND THE LAW 241, 241 (Eyal Zamir & Doron Teichman eds., 2014).

196. See *supra* Part II.A.

197. See Calo, *supra* note 14, at 553.

198. See generally CASTRONOVA, *supra* note 194; KELLY, *supra* note 149.

199. See *supra* Part IV.C.

all legal rules.²⁰⁰ Protecting the reasonable expectations of virtual reality users means that as the simulated environment creates an experience of spatial, social, and moral reality that parallels physical reality, the law should protect a parallel set of norms and interests.

This argument makes two assumptions that need to be noted. First, it assumes a subjective legal perspective. Legal institutions could take an external perspective on virtual reality behavior, as they sometimes do in cyberlaw cases.²⁰¹ The subjective experience of browsing a website, for example, can be seen objectively as bits of data exchanged between clients and servers via a transport protocol.²⁰² In the case of virtual reality environments, an objective or external perspective nullifies their distinctiveness and reduces user behavior to people wearing headsets and moving around while waving controllers in the air. This point of view completely misses the meaning of virtual reality, an inherently subjective medium—an application of a concept defined by subjectiveness. Second, it assumes a static real-world frame of reference when applying the exceptionalism label. Technology exceptionalism can be a relative concept: technology can be deemed legally exceptional in a certain context and legally unexceptional in another.²⁰³ When, for instance, virtual reality technology facilitates norms that are equivalent to the norms of physical reality and differ from the norms of cyberspace, it can be labeled as legally unexceptional with regards to physical reality and, at the same time, legally exceptional with regards to cyberspace. As the difference is purely semantic, a static frame of reference helps avoid confusion.

Metaphorical conceptions of an alternate spatial and social reality, common theoretical conceptions of escaping physical reality, and the direction of concrete technological evolution all establish the notion of cyberspace as virtual reality. The function of virtual reality technology—to create a subjectively real, spatial and social synthetic environment—makes it legally equivalent to physical reality and,

200. See ROSCOE POUND, AN INTRODUCTION TO THE PHILOSOPHY OF LAW 189 (1922); Bailey H. Kuklin, *The Plausibility of Legally Protecting Reasonable Expectations*, 32 VAL. U. L. REV. 19, 19–20 (1997).

201. See Orin S. Kerr, *The Problem of Perspective in Internet Law*, 91 GEO. L.J. 357, 385 (2000); see also Brett M. Frischmann, *The Prospect of Reconciling Internet and Cyberspace*, 35 LOY. U. CHI. L.J. 205, 206 (2003).

202. See, e.g., AHARON YADIN, COMPUTER SYSTEMS ARCHITECTURE 35–42, 369–70 (2016).

203. See Wu, *supra* note 13, at 180.

therefore, inherently unexceptional.²⁰⁴ Cyberspace, which is conceptually equivalent to virtual reality, must therefore also be deemed unexceptional.

Cyberspace exceptionalism in its moderate form constitutes the foundation of cyberlaw theory. If cyberspace is unexceptional, the theoretical rationale for cyberlaw as a body of cyberspace-specific laws dissipates. This dramatic consequence will not be instantaneous. In time, as virtual reality environments develop and cyberspace continues to evolve, cyberspace-specific laws may be called into question; some may even be rolled back. Understanding this potential development now provides an interesting opportunity to start moving away from some of the more problematic cyberspace-specific legal regimes.

VI. UNEXCEPTIONALISM AS AN OPPORTUNITY

Virtual reality technology presents a dual opportunity to rethink some problematic exceptionalistic legal doctrines. First, the conceptualization of cyberspace as virtual reality impacts legal analysis as it assigns cyberspace subjective, spatial, and social characteristics rather than metaphorical ones. Second, and more importantly, cyberspace unexceptionalism dramatically undermines the theoretical foundation of cyberlaw as a body of cyberspace-specific laws. On this basis, this Part of the Article revisits the three examples previously detailed in Part III,²⁰⁵ suggesting that the vague cyberspace-specific legislation governing hacking may be replaced by clear and well-established criminal trespass provisions; ineffective cyberstalking and cyberharassment laws may be replaced by better-enforced general stalking and harassment laws; and unchecked cybersurveillance may be balanced by constitutional privacy protection.

A. From Hacking to Trespass

Cyberspace-specific computer misuse laws are overly vague and broad, criminalizing minor Internet infractions and working against individual digital freedoms and an open digital culture.²⁰⁶ Before these laws were enacted, computer hacking was deemed akin

204. See Philip Brey, *Virtual Reality and Computer Simulation*, in THE HANDBOOK OF INFORMATION AND COMPUTER ETHICS 361, 365 (Kenneth E. Himma & Herman T. Tavani eds., 2008) (arguing that “real” and “virtual” are conceptually equivalent).

205. See *supra* Part III.A.–III.C.

206. See *supra* Part III.A.

to criminal trespass: this premise assumes that a computer hacker breaks into a computer system or network the same way a trespasser breaks into a physical place and with similar intent.²⁰⁷ The problem with using criminal trespass to prosecute computer hacking, however, is that trespass is spatial in nature, possessing the fundamental constituent element of *entering*²⁰⁸—interpreted by common law as crossing a threshold and the subsequent presence of a human body in a specific place.²⁰⁹ Following the conceptualization of cyberspace as a spatial virtual reality, a normative move from cyberspace-specific computer misuse laws back toward criminal trespass seems plausible, as intrusion into virtual reality cyberspaces may involve subjectively spatial action.²¹⁰

Some legal scholars have argued against cyberspace-specific computer crime laws, suggesting that classic criminal doctrine like trespass is sufficient to the task of prosecuting computer offenses.²¹¹ This markedly unexceptionalistic position is now strongly supported by the advent of virtual reality technology and its consequent theoretical impact on cyberspace exceptionalism because absent the theoretical exceptionalistic justification for cyberspace-specific cybercrime legislation, computer misuse laws become unnecessary and replaceable by trespass and other general criminal law doctrines. Additionally, trespass is a clearly defined criminal behavior; meanwhile, unauthorized access to a computer is a conceptually abstract technological event. Criminal law is ill-suited to deal with abstract technological functionality. A trespass-based criminal law regime for virtual reality cyberspace would be more in line with the natural function of criminal law to prohibit and deter concrete socially harmful behavior.²¹² Furthermore, it would not carry wider negative implications for individual liberties. Thus, the Virtual Reality Renaissance presents an opportunity to move away from a flawed, disadvantageous cybercrime doctrine back toward well-established general criminal law.

207. See Kerr, *supra* note 65, at 1605–07.

208. See MODEL PENAL CODE § 221.2(1) (AM. LAW INST. 2016); see also BACIGAL & TATE, *supra* note 157, at 111; MOLAN ET AL., *supra* note 157, at 300; Brenner, *Is There Such a Thing as “Virtual Crime”?*, *supra* note 40, ¶¶ 81–83.

209. See Kerr, *supra* note 65, at 1606–07.

210. See Yadin, *Virtual Reality Intrusion*, *supra* note 134, at 97–99.

211. See Brenner, *Is There Such a Thing as “Virtual Crime”?*, *supra* note 40, ¶ 33; Olivenbaum, *supra* note 40, at 578.

212. See, e.g., ANDREW ASHWORTH & JEREMY HORDER, *PRINCIPLES OF CRIMINAL LAW* 1 (7th ed. 2013); JEROME HALL, *GENERAL PRINCIPLES OF CRIMINAL LAW* 213 (2d ed. 2005).

B. Enforcing Stalking and Harassment

Cyberharassment and cyberstalking laws are poorly enforced due to inconsistent norms, dismissive law enforcement attitudes, and freedom of information concerns.²¹³ The exceptionalistic disparity between real-world stalking and harassment and their cyberspace analogues is at the root of this enforcement problem.²¹⁴ Traditional crime is typically personal: it is perpetrated within a community and at a specific location, which together lend it social context. Cyberstalking, cyberharassment, and other cybercrimes, however, are characterized by distance—both physical and conceptual—between perpetrator and victim as well as by the absence of a defined crime scene.²¹⁵ The conceptualization of cyberspace as virtual reality lends cyberstalking and cyberharassment some spatial and social context. Cyberspace behavior may be more social than previously assumed and may be associated with specific, virtual locations. While cyberstalking and cyberharassment may remain less personal than their real-world analogues, the conceptual distance between cyberstalking and cyberharassment perpetrators and victims could be diminished.

Cyberstalking, cyberharassment, and other cybercrimes are often not considered “real crimes” in a law enforcement culture that rewards physical achievement.²¹⁶ Moving away from the exceptionalistic distinctions between cyberstalking and “real” stalking, and cyberharassment and “real” harassment, may mitigate this problem. The understanding that all stalking and harassment behaviors are legally the same, regardless of technological circumstances, may also reduce the technophobic law enforcement reluctance to pursue complex technological investigations.²¹⁷ Furthermore, government agencies may be more forthcoming with funding general stalking and harassment investigations and training—a common problem with cybercrime enforcement.²¹⁸ Finally, the objections of freedom of information advocates to cyberstalking and cyberharassment enforcement may be moderated by the understanding that, normatively, there is much more to stalking and harassment than online speech that may or may not be subject to

213. See *supra* Part III.B.

214. See CITRON, *supra* note 84, at 102.

215. See Marc D. Goodman & Susan W. Brenner, *The Emerging Consensus on Criminal Conduct in Cyberspace*, 10 INT'L J.L. & INFO. TECH. 139, 151 (2002).

216. See Marc D. Goodman, *Why the Police Don't Care About Computer Crime*, 10 HARV. J.L. & TECH. 465, 478–79 (1997).

217. See *id.* at 479–80.

218. See *id.* at 479.

First Amendment protection;²¹⁹ these crimes comprise a range of unlawful behavior that may span different technological contexts.

C. Reinstating Constitutional Privacy

Government cybersurveillance norms and practices are subject to lax statutory privacy in lieu of Fourth Amendment protection. This protection is usually extended to places where a reasonable expectation of privacy is recognized—an inherently spatial legal test that makes constitutional privacy inapplicable to intangible cyberspaces.²²⁰ Recently, the Supreme Court indicated that, in certain instances, other factors may be significant in determining whether Fourth Amendment protection is triggered.²²¹ This development might suggest a careful move away from the spatial conception of Fourth Amendment privacy toward a broader conception that may eventually include the Internet.²²² The conceptualization of cyberspace as virtual reality suggests a more prompt opportunity to apply Fourth Amendment protection to cyberspace through the understanding that cyberspace does possess subjective spatiality.

The exceptionalistic view that cyberspace is legally different from physical reality permeates Fourth Amendment discourse in another way; it assumes that cyberspace users know that their behavior is mediated and therefore cannot expect constitutional privacy protection.²²³ The conceptualization of cyberspace as virtual reality negates this premise. Virtual reality cyberspace allows a broad range of action, reaction, and interaction in different technological contexts, some of which feel distinctly unmediated. The notion that cyberspace users maintain a continuous active awareness of being in a mediated environment cannot be considered a reasonable legal assumption.²²⁴ Thus, the rise of virtual reality technology and the

219. See CITRON, *supra* note 84, at 203–05.

220. See Katz v. United States, 389 U.S. 347, 352–53 (1967); Baude & Stern, *supra* note 102, at 1871; Orin S. Kerr, *Applying the Fourth Amendment to the Internet: A General Approach*, 62 STAN. L. REV. 1005, 1008 (2010); Tracey Maclin, *The Central Meaning of the Fourth Amendment*, 35 WM. & MARY L. REV. 197, 215 (1993); Peter P. Swire, *Katz Is Dead. Long Live Katz*, 102 MICH. L. REV. 904, 923 (2004).

221. See Riley v. California, 134 S. Ct. 2473, 2488 (2014); United States v. Jones, 565 U.S. 400, 407 (2012); see also Fabio Arcila, Jr., *GPS Tracking out of Fourth Amendment Dead Ends: United States v. Jones and the Katz Conundrum*, 91 N.C. L. REV. 1, 60 (2012); Orin S. Kerr, *The Mosaic Theory of the Fourth Amendment*, 111 MICH. L. REV. 311, 318 (2012).

222. See Kerr, *supra* note 221, at 345.

223. See Kerr, *supra* note 102, at 562–63; Solove, *Taxonomy of Privacy*, *supra* note 102, at 526; Solove, *Digital Dossiers*, *supra* note 102, at 1134–38.

224. See Yadin, *Virtual Reality Surveillance*, *supra* note 134, at 783.

move away from exceptionalism presents an opportunity to reestablish balance between individual privacy rights and public security interests.

VII. CONCLUSION

Cyberspace is changing. Technology giants are pouring billions into virtual reality research and development—technology with the potential to revolutionize online interaction. Virtual reality devices and environments are emerging, and cyberlaw scholars are starting to take notice. From a legal perspective, virtual reality is close enough to physical reality to be considered unexceptional. Cyberspace is conceptually and concretely equivalent to virtual reality. Therefore, cyberspace can be considered legally unexceptional, undermining cyberlaw and providing an opportunity to move away from problematic cyber-specific legal regimes.

This conclusion is not a theoretical logic exercise. Human behavior in the twenty-first century is a technosocial continuum.²²⁵ People move at ease between physical reality, the two-dimensional cyberspace, and virtual reality cyberspace. They carry cyberspace in their pockets, they wear it, and they live with it in their homes. Experts are exploring virtual reality contact lenses,²²⁶ brainwave controllers,²²⁷ and full sensory interfaces.²²⁸ In twenty years, we may even experience virtual reality cyberspace through a direct nervous system link.²²⁹ It is difficult, and may soon be impossible, to distinguish between cyberspace behavior and physical behavior—between “real,” “not real,” and “virtually real.”²³⁰ Cyberspace legal exceptionalism is an obsolete notion, but perhaps it was only temporary to begin with.²³¹ It is high time for the law to

225. See Strandburg, *supra* note 40, at 654–56.

226. See KELLY, *supra* note 149, at 26.

227. See Dan Raile, *Virtual Reality Powered by . . . Our Minds? '10 Years from Now, It Will Seem Obvious'*, GUARDIAN (Nov. 12, 2016, 5:00 AM), <https://www.theguardian.com/technology/2016/nov/12/virtual-reality-brainwave-reading-technology-eyemynd> [<https://perma.cc/4XTZ-E9WY>].

228. See Lisa Eadicicco, *3 Things to Know About the Future of Virtual Reality*, TIME (May 12, 2016), <https://time.com/4324598/alienware-interview-virtual-reality> [<https://perma.cc/E535-ZXSP>].

229. See Ray Kurzweil, *Ray Kurzweil: This Is Your Future*, CNN (Dec. 26, 2013), edition.cnn.com/2013/12/10/business/ray-kurzweil-future-of-human-life [<https://perma.cc/QA9H-5YBE>].

230. See Brey, *supra* note 204, at 367. See generally JEAN BAUDRILLARD, SIMULACRA AND SIMULATION (Sheila Faria Glaser trans., Univ. of Mich. Press 1994) (1981).

231. See Tushnet, *supra* note 16, at 1643–44 (suggesting that technology exceptionalism is not a permanent state).

abandon technology-specific rules in favor of general rules designed to regulate human behavior rather than technology.