THE UNPROPERTIED INTERNET

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It has often been said that the internet lacks public property. Unlike the offline world, denizens of cyberspace cannot gather in the digital equivalent of public parks, cannot shame websites by picketing on adjacent cyber-sidewalks, and cannot loiter in online streets and alleys if they lack a cyber-place of their own. Yet scant attention has been paid to an even more consequential fact. Not only does cyberspace lack public property, but it also lacks private property.

In the early 2000s, scholars debated whether entities should possess property rights in their websites, email services, and other cyber-resources and thereby enjoy the right to exclude others from otherwise open areas of the internet. That debate was effectively settled when courts found that cyber-resources indeed constituted property—cyberproperty—and that holders therefore enjoyed certain property-based rights to exclude others from those resources.

Yet since that time, a key feature of property has remained elusive. Although providers and users alike can often possess, develop, monetize, transfer, sell, and even exclude others from their cyberproperty, they cannot own it. The perfectly service-oriented nature of the internet creates an environment in which licenses, leaseholds, and other possessory property interests may be had, but title is not among them. An internet devoid of ownership is, by definition, an internet devoid of private property.

In times past, when the internet functioned merely as a tool or supplement to our daily lives, the lack of title-held cyberproperty was no more concerning than the absence of ownership rights in telephone or satellite services. But as more

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and more aspects of society move online, the inevitable consequence is that society itself will become increasingly unpropertied. History shows that many troubling phenomena may emerge when private property rights are weak or nonexistent, from tragedies of the commons to the absence of privacy to deep, structural inequality.

Drawing on lessons from pre-internet practices such as feudalism, coverture, and Communism, this Article explores the degree to which problems that have presented themselves in unpropertied or under-propertied societies are likely to represent themselves in a modern society that lives online. It also argues that for all the scholarly concern about an internet in which property rights are too strong, insufficient attention has been paid to the dangers that can arise when property rights are too weak. Finally, it offers a handful of proposals to introduce or at least approximate ownership in cyberspace, with options spanning regulation, private ordering, and technological solutions.

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Introduction

Imagine a society without property. What might it look like? At first glance, it might appear no different from any other society. People would still live in houses, consume food, perhaps even drive cars. After all, a society that lacked property would not lack *things*. What we call "property" is, at root, little more than a set of relationships between people *about* things.[1] Take away property, and those things remain.

But take away expectations people have about the permanence of their possessions or about their rights to keep them from others, and society would start to function very differently. A person might temporarily possess her car, but without property rights, she would have no assurance that the state—or another person—could not deprive her of it at any time. Or suppose the state rewarded her for her daily work by providing a house in which she could safely dwell all the days of her life. She might therefore enjoy a form of secure "wealth" during her lifetime but have no means to pass that wealth down to her children when she dies. Each of her children, and indeed each generation, might have to start from scratch when it came to building a better life.

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[1] Felix S. Cohen, *Dialogue on Private Property*, 9 Rutgers L. Rev. 357, 361–63 (1954).

Without places to call their own, denizens of an unpropertied society might enjoy far less privacy.[2] The right to exclude, often regarded as the foundational right in the property owner's bundle of sticks,[3] not only protects the owner's land from the trespasser's feet and her goods from the thief's hands but shields her *affairs* from the neighbor's wandering eyes and nose. It also supplies a crucial ingredient for free expression.[4] Whether enabling the heretic to use her chattel instruments to print and distribute controversial ideas or to hold a secret gathering of like-minded rebels behind closed doors, property powers speech in ways we often take for granted.[5]

Societies with weak or nonexistent property rights also have checkered histories, to put it mildly. Disregarding self-ownership, the most basic property right a human can have, played a key role in justifying slavery[6] and in denying married women the right to their own legal identity under coverture.[7] Setting aside moral debates, Communism, with its aim of abolishing private property,[8] inadvertently brought poverty to millions by inefficiently allocating resources and destroying

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2 *See* AARON PERZANOWSKI & JASON SCHULTZ, THE END OF OWNERSHIP: PERSONAL PROPERTY IN THE DIGITAL ECONOMY 7 (2016); Margaret Jane Radin, *Property and Personhood*, 34 STAN. L. REV. 957, 997 (1982).

3 *See* Thomas W. Merrill, *Property and the Right to Exclude*, 77 NEB. L. REV. 730, 730–31 (1998).

4 *See* Thomas Gordon, *Of Freedom of Speech: That the Same is Inseparable from Publick Liberty* (Feb. 4, 1720), *reprinted in* 1 JOHN TRENCHARD & THOMAS GORDON, CATO'S LETTERS: OR, ESSAYS ON LIBERTY, CIVIL AND RELIGIOUS, AND OTHER IMPORTANT SUBJECTS 110, 110 (Ronald Hamowy ed., Liberty Fund 1995) ("This sacred privilege is so essential to free government, that the security of property; and the freedom of speech, always go together . . . .").

5 *See* D. Benjamin Barros, *Property and Freedom*, 4 N.Y.U. J.L. & LIBERTY 36, 64 (2009); RICHARD A. EPSTEIN, TAKINGS: PRIVATE PROPERTY AND THE POWER OF EMINENT DOMAIN 138–39 (1985).

6 *See* Peter Halewood, *On Commodification and Self-Ownership*, 20 YALE J.L. & HUMANS. 131, 132 n.6 (2008) ("[T]he defining sin of slavery was its denial of property in the self."); Kaimipono David Wenger, *Slavery as a Takings Clause Violation*, 53 AM. U. L. REV. 191, 192 (2003).

7 *See* Jill Elaine Hasday, *Contest and Consent: A Legal History of Marital Rape*, 88 CALIF. L. REV. 1373, 1424 (2000) ("In listing the features of coverture that they rejected, [feminist Lucy] Stone and [her partner Henry] Blackwell cited a husband's right to 'custody of the wife's person' first." (quoting Henry B. Blackwell & Lucy Stone, Protest (1855), *reprinted in* 1 HISTORY OF WOMAN SUFFRAGE 260, 261 (Elizabeth Cady Stanton, Susan B. Anthony & Matilda Joslyn Gage eds., Ayer Co. 1985) (1881))).

8 *See* KARL MARX & FRIEDRICH ENGELS, THE COMMUNIST MANIFESTO 85 (Jeffrey C. Isaac ed., Samuel Moore trans., Yale Univ. Press 2012) (1848) ("[T]he theory of the Communists may be summed up in the single sentence: Abolition of private property.").

incentives for production.[9] And we recognize present-day democracies as underdeveloped or backsliding where property ownership is wildly unequal.[10]

Given these indictments, we would rightly regard it as a regressive development to roll back the property rights we enjoy today in our persons, chattels, and realty. Returning society to an unpropertied or under-propertied state would threaten to reintroduce many social ills thought to be long dead. Fortunately, property generally remains protected under U.S. law, and state and local governments continue to invest millions of dollars each year into improving systems that record and clarify precisely who owns what.[11]

Yet even as modern society continues to bolster property rights in one sense, it is actively undermining them in another. The internet, that great product of innovation and instrument of progress, ironically, contains within itself certain seeds of regression. And property lies at the heart of the matter.

It has been said that cyberspace lacks public property.[12] In the offline world, public spaces such as parks, sidewalks, and streets provide valuable public benefits.[13] They offer free venues for leisure and exercise.[14] They enable picketers to shame neighboring institutions.[15] And they offer a "free speech subsidy" to those who wish to use them for rallies or other forms of public expression.[16] Because the internet lacks comparable public spaces, internet users generally cannot gather in venues uncontrolled by commercial actors, cannot "picket" deplorable

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9 *See* Encyclopedia Britannica, *Collectivization* (2025), https://www.britannica.com/money/collectivization; Gary Saul Morson & Morton Schapiro, Minds Wide Shut: How the New Fundamentalisms Divide Us 168–75 (2021). *See generally* Robert Conquest, Reflections on a Ravaged Century 85–114 (2000); Nikolaĭ Shmelev & Vladimir Popov, The Turning Point: Revitalizing the Soviet Economy (1989).

10 *See* Francis Fukuyama, Political Order and Political Decay 7 (2014); Daron Acemoglu & James A. Robinson, Why Nations Fail 429–30 (2012).

11 *See* Press Release, U.S. Gen. Servs. Admin., Technology Modernization Fund Announces Targeted Investments to Improve Digital Customer Experience and Enhance Data Protection (July 6, 2023), https://www.gsa.gov/about-us/newsroom/news-releases/technology-modernization-fund-announces-targeted-i-07062023 [https://perma.cc/22A8-M8EA].

12 *See, e.g.*, Dawn C. Nunziato, *The Death of the Public Forum in Cyberspace*, 20 Berkeley Tech. L.J. 1115, 1116 (2005).

13 Noah D. Zatz, *Sidewalks in Cyberspace: Making Space for Public Forums in the Electronic Environment*, 12 Harv. J. Law & Tech. 149, 151 (1998).

14 *Id.* at 158 n.34.

15 *Id.*

16 *See* Nunziato, *supra* note 12, at 1117; J.M. Balkin, *Some Realism About Pluralism: Legal Realist Approaches to the First Amendment*, 1990 Duke L.J. 375, 376.

websites, and cannot express themselves to the extent otherwise permitted under the First Amendment. Yet, far more consequential than the absence of these public benefits is a fact that has largely gone unnoticed. Not only does the internet lack public property; it also lacks *private* property.

That might seem like a debatable assertion. After all, the internet is awash in content that represents valuable intellectual property. And the ease with which users can copy and share text, images, and music without authorization launched fierce policy debates that consumed cyberlaw for the better part of two decades. If those debates weren't about the promiscuity of property on the internet, then what were they about?

Moreover, the internet depends on a great deal of property to function. Not only do users access the internet using property—their laptops and smartphones—but the internet itself is ultimately an abstraction over quadrillions of operations that run on physical hardware like servers and routers. The "cloud" is little more than a collection of wires and data centers,[17] a disappointingly tangible and terrestrial affair.

Finally, we must reckon with the increasingly spatial nature of the internet. Although scholars have been quick to point out that "cyberspace" is little more than a metaphor, that online "space" is in fact quite different from physical space, and that attempting to translate such imagery into legal policy can produce strange (or even absurd) results, technological and sociological developments are beginning to chip away at their claims. Cyberspace *is* becoming more like a place with each passing year, and not just in the metaphorical sense. The Internet of Things and ubiquitous connectivity are superimposing cyberspace onto physical space such that it is becoming all but impossible to exit the cyber-grid. And companies working at the vanguard of virtual reality and the metaverse are making steady progress on their goal of making online spaces indistinguishable from their offline doppelgängers.[18]

But in stating that the internet lacks private property, I am not referring to property used to *operate* the internet, to

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17 *What Is the Cloud?*, CLOUDFLARE, https://www.cloudflare.com/learning/cloud/what-is-the-cloud/ [https://perma.cc/7S53-74G7] (last visited Apr. 18, 2025).

18 *See* Sam Ochanji, *Meta Reality Labs Research: Codec Avatars 2.0 Approaching Complete Realism with Custom Chip*, VIRTUAL REALITY TIMES (May 5, 2022), https://virtualrealitytimes.com/2022/05/05/meta-reality-labs-research-codec-avatars-2-0-approaching-complete-realism-with-custom-chip/?fs=e&s=cl [https://perma.cc/7LX2-26QM].

property used to *access* the internet, or even to property that can be distributed *through* the internet. Rather, I am referring to the kinds of resources and spaces that are not only unique to the internet but that *define* the internet, making it distinct from other technologies. In short, my focus is on the universe of internet-specific resources that scholars have referred to as "cyberproperty."

Cyberproperty includes online accounts, aliases, avatars, and other resources that are used to construct online identities and personas. It includes the kinds of assets, tokens, and entitlements users create, acquire, purchase, and use within websites, networked mobile apps, and other online applications. And it includes the online services that create and reify each of the foregoing resources.

Cyberproperty occupies a curious position within property law. On the one hand, users and providers alike can possess cyber-resources. They can even exclude others from those resources through the property-based torts of conversion and trespass to chattels. On the other hand, neither users nor providers can ultimately *own* their online assets. They cannot acquire title to cyber-resources and thereby obtain the same rights and freedoms that traditional property ownership entails. Such rights include the freedom to use and dispose of online assets as they please; to sell, transfer, or bequeath those assets to others; or even to hold onto them indefinitely. They possess horizontal but not vertical rights in their resources. An environment in which private parties cannot own property is, by definition, an environment devoid of private property. It is in this sense that the internet remains unpropertied.

Despite this fact, society continues to migrate into an unpropertied cyberspace. Each year, more and more human interaction moves from the physical to the virtual. Essential activities like banking, education, health care, and news consumption have not only moved online but have done so to the neglect of their withering offline analogs. And those who lack the resources or skills to participate in the new online economy, whether individuals or nations, risk becoming permanently marginalized.[19]

Yet those who do manage to ride the tide of society's digital transformation face another danger. If cyberspace lacks

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[19] *See* Alexandra Marquez, *Former Prisoners Struggle to Re-Enter Society. What Happens When Society Moves Online?*, NBC NEWS (Mar. 28, 2021), https://www.nbcnews.com/tech/tech-news/former-prisoners-struggle-re-enter-society-happens-society-moves-onlin-rcna518 [https://perma.cc/7XFF-MAP4].

private property, and if society is throwing itself headlong into that unpropertied space, then society itself is at risk of becoming increasingly unpropertied.

This Article explores that thesis. It argues that property, despite its occasional reputation as an artifact of a regressive, pre-technological society, has long served as an instrument of progress. Property provides the foundation on which important individual liberties and civilizational interests depend. A society that fully immerses itself in cyberspace risks losing many of those benefits.

This Article proceeds as follows. Part I unpacks the nature of cyberproperty. I explain what it is, how courts first came to treat cyber-resources as excludable property, and how scholars responded to those developments in an early debate over cyberproperty that ran from the late 1990s through the mid-2000s. I argue that the early cyberproperty debate, although helpful, focused primarily on the right of service providers to horizontally exclude others from their cyber-resources, ignoring the importance of user-held cyberproperty and the vertical property rights they lack. I explain that although courts have generally found cyber-resources to constitute excludable personal property, they have not therefore concluded that users, or even providers, *own* such property. I then briefly describe the contributions of the "New Property" scholars, who have focused squarely on the vertical rights of users and consumers in the context of IP assets and smart devices, in order to apply their analytical tools to the topic of cyberproperty.

In Part II, I develop my thesis that the internet lacks private property, leveraging the contributions of the New Property scholars and building the case by defending five distinct claims drawn from property theory.

Part III makes the case for property in general. I start by acknowledging some of the traditional critiques against property based on economic, environmental, and feminist concerns and present the modern, technological critique based on the seeming superiority of the unpropertied, circular economy. Then, wholly apart from cyberspace, I describe the benefits that property brings. I demonstrate how property ownership is central to personhood, liberty, privacy, free expression, and wealth, all of which lead to the surprising conclusion that property is fundamentally a *progressive* tool. And I note the harms that have befallen both individuals and societies when property rights have been weak or nonexistent.

Part IV applies these learnings to the internet. I argue that an unpropertied internet threatens to deprive individuals

and groups of important interests, depending on the degree to which society abandons the physical for the virtual.

Finally, in Part V, I develop a multipronged proposal for how the law can establish, or at least mimic, digital ownership in cyberspace to protect society's access to the progressive benefits that property confers.

I
Cyberproperty and Its Discontents

On October 27, 2022, Elon Musk purchased Twitter for $44 billion.[20] Less than a year later, he would acquire a different asset, this time without paying a dime. Musk had decided to rebrand the company as "X" and wanted to use the @X handle for official communications going forward.[21] But there was a small problem. A user—one Gene X. Hwang—had already registered it years before.[22] From a simple supply-and-demand perspective, Hwang clearly possessed a valuable resource—one of only twenty-six single-letter handles from the Latin alphabet (and a cool letter, at that). Had Hwang decided to shop it around on the secondary market just a month earlier, he might have fetched a pretty penny. But a single email was all it took for the newly branded social media company to take it from him and put it to profitable use.

A week later, X did something similar when it seized the @music alias from Jeremy Vaught, who had used it for the previous sixteen years to market his social media business.[23] To (partially) compensate Vaught for his loss, X offered him the choice of @musiclover, @music123, or @musicmusic instead.[24] A kind gesture, to be sure, but each of those handles was already registered to someone else.[25] Honoring Vaught's selection from the menu before him, therefore, would have meant taking

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20 Kate Conger & Lauren Hirsch, *Elon Musk Completes $44 Billion Deal to Own Twitter*, N.Y. Times (Oct. 27, 2022), https://www.nytimes.com/2022/10/27/technology/elon-musk-twitter-deal-complete.html [https://perma.cc/G5CM-YAJE].

21 *See* Sarah Perez, *Twitter, Now X, Took Over the @X Handle Without Warning or Compensating Its Owner*, TechCrunch (July 26, 2023), https://techcrunch.com/2023/07/26/twitter-now-x-took-over-the-x-handle-without-warning-or-compensating-its-owner/ [https://perma.cc/KQ4C-E3PQ].

22 *See id.*

23 Ryan Hogg, *An X User with 455,000 Followers Had His Handle 'Ripped' Away by Elon Musk's Company as Part of Its Rebrand from Twitter*, Business Insider (Aug. 5, 2023), https://www.businessinsider.com/twitter-x-rips-away-music-handle-from-one-of-its-users-super-pissed-2023-8 [https://perma.cc/SY7Y-9NLJ].

24 *Id.*

25 *Id.*

a handle from another user, simply transferring the deprivation to the next person.

Had Vaught and Hwang been tempted to feel sorry for themselves, they could have spoken to any of the millions of users who not only lost their accounts when services like Fictionwise and Funimation shut down but who also saw their digital purchases go up in virtual smoke.[26] And all those users could at least console themselves that no one had revoked their ability to operate their *own* websites, a fate that has befallen others.[27]

Yet, fair or not, each of the companies that relieved these parties of their assets was squarely within its rights to do so. X, for example, states in its terms of service that it can "reclaim usernames without liability to [users]" and that "[a]ll right, title, and interest" to its services, which would necessarily include all usernames, "remain the exclusive property of [the company]."[28] Fictionwise's users likewise had plenty of notice that they licensed, rather than owned, their ebooks and that Fictionwise could discontinue the service at any time.[29] And a person's ability to operate her own website inexorably depends on services provided by domain name intermediaries, regional internet registries, and network operators, all of which reserve broad rights to cancel their services.[30]

Short of revoking online resources, providers can and do exert exquisite forms of control over those resources. Domain name registrars, for example, may dictate what kinds of

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26 *See* Joanna Cabot, *In B&N's Closure of Fictionwise, Canadian Customers Lose Big*, TeleRead (Nov. 16, 2012), https://teleread.com/in-bns-closure-of-fictionwise-canadian-customers-lose-big/index.html [https://perma.cc/3GGW-6799]; Scharon Harding, *Sony Claims to Offer Subs "Appropriate Value" for Deleting Digital Libraries*, Ars Technica (Feb. 26, 2024), https://arstechnica.com/gadgets/2024/02/sony-claims-to-offer-subs-appropriate-value-for-deleting-digital-libraries/ [https://perma.cc/ZD4Y-3NCM]; *see also* Anna Desmarais, *'Stop Killing Our Games': Petition Calls for Saving Europe's Video Games from Deletion*, Euro News (July 8, 2024), https://www.euronews.com/next/2024/08/07/stop-killing-our-games-petition-calls-for-saving-europes-video-games-from-deletion [https://perma.cc/3MUY-QMV9].

27 *See, e.g.*, Matt Binder, *Incels.me, A Major Hub for Hate Speech and Misogyny, Suspended by .ME Registry*, Mashable (Nov. 20, 2018), https://mashable.com/article/incels-me-domain-suspended-by-registry [https://perma.cc/CY5Y-WXCN].

28 *Twitter Terms of Service*, X § 4, https://twitter.com/en/tos/previous/version_13 [https://perma.cc/6YSH-ZESZ] (last visited Apr. 18, 2025).

29 *See Fictionwise Terms of Use*, Fictionwise §§ 1, 9, https://web.archive.org/web/20110727080013/http://www.fictionwise.com/terms_of_use.htm [https://perma.cc/LP7S-VHZS] (last visited Sept. 23, 2024).

30 *See* Nicholas J. Nugent, *The Five Internet Rights*, 98 Wash. L. Rev. 527, 580–87 (2023).

content or viewpoints you may host on your website.[31] Online service providers can prohibit you from transferring, selling, or even bequeathing the tokens and assets that entitle you to use service features or interact with other users, even where you purchased those resources using real-world currency. And because such services run entirely on their own servers, providers can often monitor your behavior to ensure that you comply with these restrictions (and for other reasons).[32]

Of course, in the offline world, consumers often experience similar insecurity and constraints in their resources. Rent a car, and the rental company can tell you where you may take it and how many miles you may drive. Lease a house, and your landlord can inspect it from time to time, stop you from transferring possession to someone else, and take it back at the end of the term.

But in real space, consumers typically have a failsafe at their disposal: ownership. Purchase, rather than rent, a car, and you can drive it wherever and as much as you like. Own your own home, and you can live in it indefinitely, open it to no one, sell it, or pass it down to your children.

In cyberspace, however, that failsafe is unavailable. Users and providers alike can possess cyber-resources—sometimes indefinitely—but they cannot own them. Even when such assets constitute property, they are nonetheless (ultimately) revocable. Online service providers can't help but maintain vertical connections to the resources that flow from their services, and they can often use those connections to monitor how those resources are being used, to prevent users from transferring them to others, or to revoke them altogether. The internet may be filled with property, but it is not *private* property.

To understand why, it will help to take a brief journey through the history of cyberproperty. This Part charts that history as it has passed through two major debates. In a sense, one of my goals in this Article is to inaugurate a third debate on the status of property rights in cyberspace.

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31 *See* Brenden Kuerbis, Ishan Mehta & Milton Mueller, *In Search of Amoral Registrars: Content Regulation and Domain Name Policy*, Internet Governance Project (Nov. 21, 2017), https://www.internetgovernance.org/research/search-amoral-registrars-content-regulation-domain-name-policy/ [https://perma.cc/E9JD-QPBR].

32 *See* Cecilia Kang, *F.T.C. Study Finds 'Vast Surveillance' of Social Media Users*, N.Y. Times (Sept. 19, 2024), https://www.nytimes.com/2024/09/19/technology/ftc-meta-tiktok-privacy-surveillance.html [https://perma.cc/7A3B-ACAZ].

A. Defining Cyberproperty

But first, what *is* cyberproperty? Cyberproperty refers to the universe of resources that can be found only in cyberspace. Examples include online accounts, aliases, and avatars—resources that represent or can be used to create an online identity or persona. We might use the term "digital identity" to refer to this category of online resources.

They also include resources that users acquire and use within websites, networked mobile apps, and other online applications. For example, a given website might provide certain users with privileges or entitlements that determine what they can and cannot do on the site. An app provider might allow users to earn or purchase tokens representing stored value within the app experience. Or users may acquire virtual objects that have particular utility (such as a tool to accomplish a task in a game) or that have purely personal value (such as virtual houses, clothing, or decorations that can be enjoyed within a virtual world). We might call this category of resources "digital chattels."

A third category—what I call "digital realty"—consists of the "spaces" within cyberspace that house digital identities and digital chattels and in which the latter resources have meaning. Such spaces include websites, email and other communication services, mobile apps, games, and virtual spaces, such as virtual worlds and metaverse environments. They also include the core internet resources used to construct such spaces and to make them operational, including domain names and Internet Protocol (IP) addresses.

B. The Early Debate

Many scholars initially resisted the idea of treating cyber-resources as property.[33] They worried that if websites and email services (the primary types of cyber-resources analyzed at the time) constituted property, then the entities that operated such services would consequently enjoy the right to exclude others from that property.

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[33] *See, e.g.*, Dan L. Burk, *The Trouble with Trespass*, 4 J. SMALL & EMERGING BUS. L. 27 (2000); Dan Hunter, *Cyberspace as Place and the Tragedy of the Digital Anticommons*, 91 CALIF. L. REV. 439 (2003); Mark A. Lemley, *Place and Cyberspace*, 91 CALIF. L. REV. 521, 533 (2003); David McGowan, *The Trespass Trouble and the Metaphor Muddle*, 1 J.L. ECON. & POL'Y 109 (2005); Greg Lastowka, *Decoding Cyberproperty*, 40 IND. L. REV. 23, 43–44 (2007); Michael A. Carrier & Greg Lastowka, *Against Cyberproperty*, 22 BERKELEY TECH. L.J. 1483 (2007).

They noted that a central feature of the internet—perhaps the attribute most responsible for its incredible growth and success—was its openness.[34] Any capable device could connect to the internet, essentially without permission, and, once connected, freely communicate with any other connected device. Users could surf the web and peruse the contents of any accessible site. One needed only to know another person's email address to send him a message. And private servers often relayed each other's internet traffic as a courtesy.[35] An ethic of openness and free sharing permeated the early internet. Property, with its default right to exclude, threatened to undermine that ethic.

It therefore alarmed some scholars when courts first began to recognize property rights in cyber-resources in the late 1990s and early 2000s. The road to propertization started modestly enough. Struggling against the volume of mass, unsolicited emails, Internet Service Providers (ISPs) sued spammers for "trespass to chattels" and won.[36] The theory, which courts accepted, was that because ISPs' servers were clearly chattels and because spammers were effectively using those chattels without permission, albeit electronically, their actions were equivalent to trespasses. And given that ISPs had fewer and less powerful servers at their disposal in those days, ISPs could point to concrete harms that resulted from such interference. Memory, processing power, and bandwidth were getting eaten up by spam, to the point that online services were slowing down and legitimate customers were being denied service or were threatening to leave on account of the poor experience.[37]

eBay, Inc. v. Bidder's Edge, Inc. expanded the tort of cybertrespass to websites.[38] In that case, online auction giant eBay sued a competitor, Bidder's Edge, for crawling and scraping its website for pricing information, which the latter displayed on its own comparison-shopping site.[39] Finding that eBay's web server likewise constituted a chattel, the court found no difficulty in characterizing the scraper's behavior as trespassory

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34 *See* Hunter, *supra* note 33, at 442–43 ("Cyberspace was once . . . an endless expanse of space: open, free, replete with possibility.").

35 *See id.* at 503.

36 *See, e.g.*, Am. Online, Inc. v. IMS, 24 F. Supp. 2d 548 (E.D. Va. 1998); Hotmail Corp. v. Van$ Money Pie Inc., 47 U.S.P.Q.2d 1020 (N.D. Cal. 1998); CompuServe Inc. v. Cyber Promotions, Inc., 962 F. Supp. 1015 (S.D. Ohio 1997).

37 *See CompuServe*, 962 F. Supp at 1019.

38 100 F. Supp. 2d 1058 (N.D. Cal. 2000).

39 *Id.* at 1061–63.

and enjoined Bidder's Edge from continuing to access eBay's public website.[40] However, whereas previous litigants could show that spammers were materially impacting their services, Bidder's Edge had been only a minor nuisance. Although the upstart competitor had accessed eBay's website around 100,000 times per day, such requests had consumed no more than 1.1% of eBay's load, hardly making a dent in eBay's ample capacity.[41] Other litigants likewise prevailed or survived motions to dismiss on their trespass claims against scrapers or aggregators without making any showing of material harm.[42]

To some, these results made sense. After all, the right to exclude is one of the most important rights in the property owner's bundle of sticks.[43] If website and email services, or at least the servers powering them, constituted property, then shouldn't their owners enjoy just as much right to stop minor trespasses as to stop major ones?

In 2001, a California appellate court seemed to answer that question in the affirmative. The case, *Intel Corp. v. Hamidi*, concerned the exploits of one Ken Hamidi, a former employee of Intel Corporation who thought it his duty to warn those who still worked for the company about the evils of their employer.[44] To that end, he sent six unsolicited emails through Intel's email servers over the course of two years, each email ultimately reaching tens of thousands of recipients.[45] Although Hamidi's unwelcome emails hadn't meaningfully impaired the chipmaker's email service, the court nonetheless found it unnecessary to demonstrate harm and enjoined Hamidi from continuing to traipse upon Intel's servers.[46]

These cases provoked an early debate over the issue of cyberproperty. One group of scholars in this debate—we might call them the "Open Access" camp—generally took a dim view of property rights in cyberspace.[47] Their central concern, as

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40 *Id.* at 1069–73.

41 *Id.* at 1063.

42 *See, e.g.*, Oyster Software, Inc. v. Forms Processing, Inc., No. C-00-0724, 2001 U.S. Dist. LEXIS 22520 (N.D. Cal. Dec. 6, 2001); Sw. Airlines Co. v. Farechase, Inc., 318 F. Supp. 2d 435, 442 (N.D. Tex. 2004); Register.com, Inc. v. Verio, Inc., 356 F.3d 393 (2d Cir. 2004).

43 *See* Merrill, *supra* note 3, at 730–31.

44 Intel Corp. v. Hamidi, 114 Cal. Rptr. 2d 244 (Ct. App. 2001), *rev'd*, 71 P.3d 296 (Cal. 2003).

45 *Id.* at 246, 250.

46 *Id.* at 248–52.

47 *See* authors cited *supra* note 33.

described above, was that the internet functioned best in an open manner and that property, with its attendant right to exclude, threatened to erect millions of digital fences throughout the medium.[48] Open Access scholars took a range of positions on how courts should proceed. Some didn't necessarily object to giving providers the legal right to exclude others but argued that the tort of cyber-trespass should be available only in cases where the unwelcome party materially impaired the provider's servers.[49] Others opposed the very idea of cyberproperty.[50] But among this camp, preserving an open internet was the unifying theme.

Other scholars embraced cyberproperty and marshaled various arguments in its defense. Patricia Bellia, for example, argued that online service providers could already erect digital gates using various technical measures, such as blocking IP addresses or rate-limiting HTTP requests.[51] Denying resource-holders the right to run to court, therefore, would not preserve an open internet; it would only prompt a greater reliance on self-help technical measures that lacked the give-and-take of a property-based regime.[52] Richard Epstein argued that cyber-resources were more closely akin to real property than to movables (i.e., chattels) and should therefore be protected from even minor, non-harmful forms of interference.[53] Moreover, cyberproperty is often closely tied to other, more traditional interests, such as the physical servers on which cyber-resources operate or a firm's business interests, such as its customer relationships and goodwill.[54] Protecting cyberproperty, therefore, can function as a proxy for protecting those more traditional interests.[55]

Still others, like Trotter Hardy and Joshua Fairfield, argued that virtual items merited treatment as property in their own right, whether or not they serve as proxies for physical

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48 *See, e.g.*, Hunter, *supra* note 33, at 503–09 (predicting a "cyberspace enclosure movement").

49 *See, e.g.*, Burk, *supra* note 33, at 53.

50 *See, e.g.*, Carrier & Lastowka, *supra* note 33, at 1484; Hunter, *supra* note 33, at 446; Lastowka, *supra* note 33, at 43–44.

51 *See* Patricia L. Bellia, *Defending Cyberproperty*, 79 N.Y.U. L. Rev. 2164, 2216–24 (2004).

52 *Id.* at 2270.

53 *See* Richard A. Epstein, *Cybertrespass*, 70 U. Chi. L. Rev. 73, 82–83 (2003).

54 *See id.*

55 *See id.*

servers or more traditional intangible interests.[56] Many online resources, such as domain names, email accounts, and even items created within online virtual worlds, can be rivalrous, persistent, and interconnected—all legally relevant characteristics shared with real-world property.[57] It therefore made little sense to deny them the status of property solely on account of their intangible, virtual nature.[58]

In the end, courts charted a middle, and sometimes muddled, course. When it came to outright theft of online resources, many courts found little trouble recognizing such resources as property. For example, in *Kremen v. Cohen*, the holder of Sex.com sued Network Solutions, the issuing registrar, for conversion after the latter was hoodwinked into transferring Kremen's domain name to a fraudster.[59] Reasoning that a domain name was an interest capable of precise definition and exclusive control, the Ninth Circuit held that domain names constituted intangible personal property.[60]

Applying California law, the court then went further. Because domain names represented personal property, a person deprived of his domain name could avail himself of the property-based tort of conversion.[61] The same logic was later applied to other forms of cyber-resources, permitting users to bring conversion claims against other parties for taking over their websites, email accounts, or social media profiles or for locking them out of the same.[62] Courts in other U.S. jurisdictions have agreed that domain names and websites constitute

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56 *See generally* Joshua A.T. Fairfield, *Virtual Property*, 85 B.U. L. Rev. 1047 (2005) [hereinafter Fairfield, *Virtual Property*]; I. Trotter Hardy, *The Ancient Doctrine of Trespass to Web Sites*, 1996 J. Online L. art. 7. For a later elaboration on these ideas, *see* Joshua A.T. Fairfield, *Making Virtual Things*, 64 Wm. & Mary L. Rev. 1057 (2023).

57 Fairfield, *Virtual Property*, *supra* note 56, at 1048–52.

58 *Id.*

59 *See* Kremen v. Cohen, 337 F.3d 1024, 1026–27 (9th Cir. 2003).

60 *Id.* at 1030.

61 *Id.* at 1035–36.

62 *See* JLM Couture, Inc. v. Gutman, 91 F.4th 91, 96–99 (2d Cir. 2024); PhoneDog v. Kravitz, No. C 11-03474, 2011 U.S. Dist. LEXIS 129229, at *26–27 (N.D. Cal. Nov. 8, 2011); Astroworks, Inc. v. Astroexhibit, Inc., 257 F. Supp. 2d 609, 618 (S.D.N.Y. 2003); Eysoldt v. ProScan Imaging, 957 N.E.2d 780, 786 (Ohio Ct. App. 2011) (email accounts). *But see* Mattocks v. Black Ent. Television LLC, 43 F. Supp. 3d 1311, 1321 (S.D. Fla. 2014) (holding that a social media user did not have a property interest in the "likes" associated with her social media page).

property,[63] as have foreign courts,[64] and courts have treated domain names as assets in bankruptcy[65] and permitted creditors to seize them under garnishment, attachment, and other forms of execution.[66]

But recognizing cyber-resources as property does not, by itself, protect that property from theft. Some jurisdictions subscribe to the "merger rule" under which a conversion claim for intangible property can be stated only if the intangible property rights converted are "of the kind customarily merged in a document."[67] Although the *Kremen* court found the domain name system itself to be a sufficient (albeit electronic) "document" and other jurisdictions don't follow the merger rule at all,[68] some courts have barred conversion claims for cyber-resources under the doctrine.[69] Strictly applying the rule, the latter courts have held both that (1) cyber-resources are property and (2) they cannot be protected from theft under the common law.[70]

Likewise, where resource-holders have alleged that other parties merely *interfered* with their cyberproperty (short of taking it), remedies have not always been available. The same year *Kremen* was decided, the California Supreme Court took up the *Intel Corp. v. Hamidi* case and reversed the lower court's

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63 *See* CRS Recovery, Inc. v. Laxton, 600 F.3d 1138, 1143 (9th Cir. 2010) (noting "the majority of states' justifiable coalescence around understanding domain names as intangible property").

64 *See, e.g.*, Nytt Juridiskt Arkiv [NJA] [Supreme Court Reports] 2017 p. 1070 B 2787-16 (Swed.), *translated in* 49 Int'l Rev. Intell. Prop. & Competition L. 992 (2018); Tucows.com Co. v. Lojas Renner S.A. (2011), 106 O.R. 3d 561 (Can. Ont. C.A.).

65 *See, e.g.*, Panda Herbal Int'l, Inc. v. Luby (*In re* Luby), 438 B.R. 817, 829–30 (Bankr. E.D. Pa. 2010); Jubber v. Search Mkt. Direct, Inc. (*In re* Paige), 413 B.R. 882, 918 (Bankr. D. Utah 2009); Schott v. McLear (*In re* Larry Koenig & Assoc., LLC), Ch. 7 Case No. 01-12829, Adv. No. 03-1063, 2004 Bankr. LEXIS 2311, at *21 (Bankr. M.D. La. Mar. 31, 2004).

66 *See, e.g.*, Online Partners.com, Inc. v. Atlanticnet Media Corp., No. C 98-4146, 2000 U.S. Dist. LEXIS 783, at *26, *30–31 (N.D. Cal. Jan. 18, 2000) (attachment); Office Depot Inc. v. Zuccarini, 596 F.3d 696, 702 (9th Cir. 2010) (execution); Sprinkler Warehouse, Inc. v. Systematic Rain, Inc., 880 N.W.2d 16, 22 (Minn. 2016) (garnishment).

67 Restatement (Second) of Torts § 242 (Am. L. Inst. 1965).

68 Kremen v. Cohen, 337 F.3d 1024, 1033 (9th Cir. 2003).

69 *See, e.g.*, Kumar v. Patel, No. 23CV019127-910, 2024 NCBC LEXIS 36, at *15–18 (N.C. Super. Ct. Feb. 28, 2024) (dismissing plaintiff's conversion claim as to his eBay account); Simmonds Equip., LLC v. GGR Int'l, Inc., 126 F. Supp. 3d 855, 868–69 (S.D. Tex. 2015) (dismissing conversion claim as to a website).

70 *See, e.g.*, Xereas v. Heiss, 933 F. Supp. 2d 1, 7 (D.D.C. 2013); *Hoath v Connect Internet Servs Pty Ltd* (2006) 229 ALR 566 (Austl.); Emke v. Compana, LLC, No. 06-CV-1416-L, 2007 WL 2781661, at *5 (N.D. Tex. Sept. 25, 2007) (choosing to apply California law precisely because Texas law would have barred recovery under the merger rule).

ruling.[71] Persuaded by amicus briefs filed by various Open Access scholars, the Court held that although Intel's email system represented chattels, Intel could not sustain a claim for trespass to those chattels where Hamidi's emails had not materially impaired them.[72] The Court thus distinguished between real property, for which any unauthorized interference was actionable, and personal property, for which a plaintiff needed to show that the defendant dispossessed it of the property or physically harmed it. Other courts have since embraced this distinction, allowing electronic trespass claims to email servers, websites, and telephone systems to go forward when the plaintiff can demonstrate material harm to the chattel and dismissing such claims when the plaintiff cannot.[73]

Thus, the Open Access camp won in part and lost in part. When it comes to trespass, the need to show material impairment has prevented website operators from asserting trespass claims against any and every user or competitor they don't want on their otherwise publicly available sites.[74] And when it comes to outright theft, cyber-resources seem to enjoy the same rights of exclusion as other forms of intangible property under conversion, unless the jurisdiction strictly applies the merger doctrine. But importantly, courts erected such limitations on property-based torts only by first *recognizing* cyber-resources as personal property. Those who wanted courts to find *no* property rights in cyber-resources were therefore disappointed. Cyberproperty exists and is here to stay.

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71 Intel Corp. v. Hamidi, 71 P.3d 296 (Cal. 2003).

72 *Id.* at 302–11.

73 With respect to web scraping, compare Snap-On Bus. Sols. Inc. v. O'Neil & Assocs., 708 F. Supp. 2d 669, 678–80 (N.D. Ohio 2010) (material harm to web servers demonstrated), with X Corp. v. Bright Data Ltd., 733 F. Supp. 3d 832, 842–43 (N.D. Cal. 2024) (insufficient harm). With respect to unsolicited emails, compare Sch. of Visual Arts v. Kuprewicz, 771 N.Y.S.2d 804, 808 (N.Y. Sup. Ct. 2003) (sufficient harm), with Omega World Travel, Inc. v. Mummagraphics, Inc., 469 F.3d 348, 359 (4th Cir. 2006) (insufficient harm). With respect to telephone communications, compare Sapan v. Coastal Credit & Debt Ventures LLC, No. CV 13-1839, 2013 U.S. Dist. LEXIS 193790, at *5 (C.D. Cal. Aug. 15, 2013) (sufficient harm), with J. Doe No. 1 v. CBS Broad. Inc., 806 N.Y.S.2d 38, 39 (App. Div. 2005) (insufficient harm).

74 The key language in this statement is "otherwise publicly available sites." In cases where trespassers have bypassed technical controls or used other parties' passwords without authorization to enter non-public areas of websites and other systems, trespassers have long been held civilly and criminally liable under computer misuse statutes such as the federal Computer Fraud and Abuse Act. 18 U.S.C. § 1030. Such statutes may or may not require that the victim demonstrate harm, depending on the specific provision at issue.

C. The New Property Literature

Useful as the early debate over cyberproperty was, it elided two key inputs. First, it focused almost entirely on whether *providers* should enjoy property rights in their cyber-resources, neglecting the issue of user property rights.[75]

Consider *CompuServe*, *eBay*, and *Intel*, the primary cases around which the early cyberproperty debate revolved. In each case, the entity that possessed the cyber-resource, and that wished to use the law to protect that resource, was a service provider, a well-heeled company eager to safeguard its bottom line. Granting any of those providers a property-based right to exclude meant giving them power over users, competitors, or any other parties who might wish to access their valuable resources. Given that firms might use such rights of exclusion to capture a disproportionate share of the internet's economic surplus, it's easy to see why Open Access scholars opposed the idea of property rights in cyberspace.

But what about users? Although they might hold fewer or less valuable cyber-resources, should they not have the right to protect those resources from interference or theft? Suppose a user developed a valuable online resource, such as a domain name, a social media account, or a digital token (or paid cold hard cash for it), only for another user (or a provider) to fiddle with it or appropriate it altogether for the latter's own use. If no property rights should inhere in cyber-resources, as some argued, then that user could be left without any legal remedy for the interference or theft.

Second, the early cyberproperty debate largely confined its analysis to the horizontal dimension of property, ignoring the equally important vertical dimension.

The horizontal dimension of property speaks to how peers compete for resources that have already been created and allocated.[76] It starts with a person who already owns or possesses a resource and analyzes whether he can keep others away from it. For example, if I own a field (real property), can I keep you, another private party, off my land, or are there circumstances

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75 One notable exception to this omission was *The Laws of the Virtual Worlds* by F. Gregory Lastowka and Dan Hunter, 92 CALIF. L. REV. 1 (2004), which explored the kinds of kinds of property rights users should possess within virtual world environments. Interestingly, Lastowka and Hunter were two of the biggest critics of cyberproperty when it came to property rights *providers* might enjoy.

76 *See* JOSHUA A.T. FAIRFIELD, OWNED: PROPERTY, PRIVACY, AND THE NEW DIGITAL SERFDOM 14 (2017); Michael A. Heller, *The Tragedy of the Anticommons: Property in the Transition from Marx to Markets*, 111 HARV. L. REV. 621, 670 (1998).

in which you or other members of the public should be able to use it in some way? Should the same rules apply to my truck (personal property)? The horizontal dimension, thus, is primarily concerned with *exclusion*.

By contrast, the vertical dimension of property concerns how one acquires, keeps, and uses resources in the first place. To continue with the above examples, it speaks to how I acquire my field and my truck as well as the nature of my ownership or possessory interests in them. Do I own them outright, or am I merely a renter who can possess them for only a limited time? Does another party have the legal right to tell me what I can and cannot do with those resources?

The horizontal dimension concerns my relationships with peers who may have no interest in my property other than the fact that they want it. The vertical dimension concerns my relationships with parties who retain some degree of power over my property, either because they claim to have a superior interest in it (e.g., my landlord's strong title interest compared to my meager leasehold interest) or because they enjoy sovereign or regulatory power over all resources (e.g., a city's power to create zoning restrictions or a state's power to exercise eminent domain).

Fortunately, following the early cyberproperty debate, a second body of scholarship emerged that concerned itself squarely with both user property rights and the vertical dimension of those rights. That scholarship, which I'll call the "New Property" literature,[77] focused on two new forms of technologically-enabled property that have become ubiquitous in the last two decades—namely, digital IP assets and smart devices.[78]

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[77] In using the term "New Property" to refer to digital IP assets and smart devices, I must acknowledge that Charles Reich first coined the term to refer to government entitlements, around which he proceeded to build a new theory of procedural due process. *See* Charles A. Reich, *The New Property*, 73 YALE L.J. 733 (1964). At the risk of kicking an administrative law hornet's nest, I would submit that such entitlements, though important, have not become such a ubiquitous form of property as to appropriate the moniker all for themselves. In analyzing domain names, a classic category of cyber-resource, Anupam Chander graciously conceded the term to Reich, labeling his internet-related subject the "New, New Property." *See* Anupam Chander, *The New, New Property*, 81 TEX. L. REV. 715 (2003). Given the centrality of cyber-resources, digital IP, and smart devices to modern society, I have chosen instead to simply use the term "New Property" to refer to such assets and to brave the consequences of the naming collision.

[78] Aaron Perzanowski, Joshua Fairfield, and Jason Schultz have been perhaps the leading voices in the New Property literature. *See* Aaron Perzanowksi & Chris Jay Hoofnagle, *What We Buy When We Buy Now*, 165 U. PA. L. REV. 315 (2017); FAIRFIELD, *supra* note 76; PERZANOWSKI & SCHULTZ, *supra* note 2; Aaron Perzanowski & Jason Schultz, *Legislating Digital Exhaustion*, 29 BERKELEY TECH.

Digital IP refers to purely digital, and sometimes impermanent instantiations of the kinds of intellectual property assets we previously purchased in physical form or for which we previously obtained perpetual rights. Instead of CDs and DVDs, we began purchasing downloadable MP3s from iTunes and remotely stored digital movies from Amazon. Such assets are purely digital, purely intangible. We later dispensed altogether with the idea of paying for content on an item-by-item basis, opting instead for monthly music or streaming services like Spotify and Netflix. Physical books have likewise been partially displaced by sales of ebooks and audiobooks or subscription services like Kindle Unlimited and Scribd.

Even software companies are moving away from the traditional model of selling perpetual licenses to applications. As software subscription (on-premises) and software-as-a-service (in the cloud) business models take over, users are increasingly having to fork over money on an ongoing basis to access the kinds of applications they could previously purchase with a one-time payment.

Not all the goods we purchase in today's digital economy are purely digital or streamed from the cloud, of course. We still buy cars, televisions, and toasters, all of which are local and tangible. But as time goes on, more and more of the "dumb" products we use in our daily lives are being infused with digital technology and services, turning them into "smart devices." Refrigerators that automatically order milk when we run low, automobiles that take control to avoid a collision or call responders after an accident, and mattresses that use artificial intelligence to adjust their temperatures in rhythm with our sleep cycles—all of these newfangled products represent smart devices, the brave new world of consumer optimization.

Such New Property assets—both digital IP and smart devices—bring real benefits to consumers, no doubt about it. But they also come with significant downsides. Subscription-based offerings require consumers to continually pay for resources they could previously buy outright. A consumer who purchases a physical book can read it as often as she likes and then give or sell it to someone else. But digital IP assets, even

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L.J. 1535 (2014). But many other scholars, some of whom have approached the issue primarily from the perspective of digital rights management, have contributed to this literature. *See, e.g.*, Natalie M. Banta, *Property Interests in Digital Assets: The Rise of Digital Feudalism*, 38 CARDOZO L. REV. 1099 (2017); Julie E. Cohen, Lochner *in Cyberspace: The New Economic Orthodoxy of "Rights Management,"* 97 MICH. L. REV. 462 (1998).

when purchased for perpetual use, often cannot be transferred to others. No secondary market exists for "used" Kindle ebooks, nor would Amazon permit one to emerge.

Digital IP assets may also be unstable. Because they reside with or are controlled by providers, such assets can often be modified or revoked by providers. This fact was brought home to many when Amazon silently, and in Orwellian fashion, deleted ebook copies of George Orwell's *1984* from customers' Kindle devices due to a dispute with the book's publisher.[79] Amazon again made news when it permitted publishers to silently update the text of already-purchased ebook copies of famous works by Agatha Christie and Roald Dahl to remove outdated or offensive terms.[80]

Even smart devices, physical though they may be, can come with strings attached. Aaron Perzanowski and Jason Schultz describe Keurig coffee machines that refuse to brew with aftermarket coffee pods.[81] Joshua Fairfield chronicles efforts by Apple, John Deere, and other companies to prohibit customers from fixing their own machines or from using third-party repair shops to do so.[82] And like digital IP vendors, smart device manufacturers have inhibited downstream sales by remotely disabling smart features when consumers transfer their goods to others.[83]

To sum it up, New Property differs from traditional property in that providers can often (1) require consumers to continually pay to access their already-purchased products, (2) limit or control how consumers can use their products, (3) prevent consumers from reselling or transferring their products, and (4) modify products that consumers previously purchased or revoke their access altogether. We might lump all these powers enjoyed by New Property providers under the umbrella of "post-sale control."

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79 *See* Brad Stone, *Amazon Erases Orwell Books from Kindle*, N.Y. TIMES (July 17, 2009), https://www.nytimes.com/2009/07/18/technology/companies/18amazon.html [https://perma.cc/4YGQ-7JTL].

80 *See* Alexandra Alter & Elizabeth A. Harris, *As Classic Novels Get Revised for Today's Readers, a Debate About Where to Draw the Line*, N.Y. TIMES (Apr. 5, 2023), https://www.nytimes.com/2023/04/03/books/classic-novels-revisions-agatha-christie-roald-dahl.html [https://perma.cc/V32E-S9W7].

81 PERZANOWKSI & SCHULTZ, *supra* note 2, at 149–50.

82 FAIRFIELD, *supra* note 76, at 189–91.

83 *See* Nick Statt, *Tesla Remotely Disables Autopilot on Used Model S After It Was Sold*, THE VERGE (Feb. 6, 2020), https://www.theverge.com/2020/2/6/21127243/tesla-model-s-autopilot-disabled-remotely-used-car-update [https://perma.cc/4WAB-J5W5].

Yet as every first-year law student learns, the law not only looks down on post-sale restraints but often refuses to enforce them.[84] If a Ford dealership sells a truck to a customer, it can include a variety of terms in its bill of sale, from warranty disclaimers to refund rights. But if it tries to sneak in a term that prohibits the customer from painting it blue or driving it to Canada, no U.S. court will enforce it. Nor can Barnes & Noble stop customers from lending or reselling the books, CDs, and DVDs they purchase. After a seller conveys title, he loses any right to control the chattel, and if he tries thereafter to do so, he does so as a tortfeasor.

If that's the case, then how do vendors like Amazon, Keurig, and John Deere get away with such restraints? The New Property scholars identify three primary mechanisms: IP, contracts, and code.

Digital IP assets are, obviously, protected by IP—typically, copyright. MP3s by copyrights to the underlying musical works, digital movies by copyrights to audiovisual works, software by copyrights to computer programs, etc. The first-sale doctrine operates to prevent copyright holders from controlling downstream sales of copyrighted works, but courts have held that the doctrine doesn't apply to digital copies.[85] You can resell your paperback copy of *The Color Purple* because doing so doesn't require you to perform any of Alice Walker's exclusive rights. But there's no way to transfer an ebook version of the same from one computer to another without making a copy of the digital file. And courts have held that that copying operation infringes the copyright holder's exclusive right of reproduction, even if the transferor deletes the original file from her computer at the same time.[86]

Contracts likewise give New Property vendors significant control over the resources they offer. It isn't that contracts themselves can overcome the law's skepticism of post-sale restraints. Simply inserting a few contract terms into the bill of sale for its smart cars won't give Tesla the right to limit your miles or prevent you from bequeathing your Model S to your favorite nephew. Rather, the trick is to tie the physical chattel to some kind of service. Tesla may not be able to prevent you from selling your vehicle to another person or from using

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84 *See* 63C AM. JUR. 2D *Property* § 44 (2025).

85 *See* Hachette Book Grp., Inc. v. Internet Archive, 115 F.4th 163, 178 (2d Cir. 2024); Capitol Recs., LLC v. ReDigi Inc., 934 F. Supp. 2d 640, 655–56 (S.D.N.Y. 2013).

86 *See Capitol Recs.*, 934 F. Supp. 2d at 650.

an independent mechanic to repair your drivetrain. But in its terms of service, it can reserve the right to cancel your subscription to service-based features, such as autonomous-driving and over-the-air software updates, or void your warranty if you do.[87]

Smart device sellers may likewise articulate post-sale restraints as scoping terms within their accompanying IP licenses. IP holders have long been able to define the scope of the patent, copyright, and trademark licenses they grant. "You can use the software for personal but not business use." "You can practice the patented invention in these countries but not those." "You may not display my trademark in connection with any sexual material." New Property vendors have therefore attempted to control how consumers use their physical chattels by nuancing the scope of the licenses they grant to the IP within those chattels. Use your highly computerized tractor to harvest certain crops that John Deere has not listed in the license terms for your tractor's embedded software, and suddenly you could be an infringer.

Of course, IP- and contract-based controls can only do so much. A vendor that is determined to prevent consumers from using its products in certain ways must not only discover who is infringing its IP or breaching its contract terms but also enforce those restrictions. Code can help with both tasks.

Smart devices are made smart by code that runs within them and network connections to remote servers that supply them with data and advanced functionality. That same code can monitor how a consumer is using the device and report any unpermitted use back to the vendor. It can also prevent consumers from coloring outside the lines in the first place. Companies that make printers or coffee machines can prevent customers from using aftermarket ink cartridges and coffee pods by programming their devices to reject items that don't include an encrypted electromagnetic code known only by the OEM.[88]

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87 *See* Statt, *supra* note 83.

88 Even if a vendor refrains from using code to restrict how its devices are used after purchase, it can nonetheless make such devices effectively useless by cutting off cloud-based services on which those devices depend once the product is no longer profitable, *see* Richard Speed, *Hive to Pull the Plug on Smart Home Gadgets by 2025*, THE REGISTER (July 12, 2022), https://www.theregister.com/2022/07/12/hive_camera_support_end/ [https://perma.cc/5J82-X4AK], or remove existing functionality unless the owner begins paying a new recurring service fee, *see* Richard Speed, *You've Just Spent $400 on a Baby Monitor. Now You Need a Subscription*, THE REGISTER (Oct. 6, 2023), https://www.theregister.

Amazon doesn't need to sue customers for reselling their Kindle ebooks or digital movies because it simply can't be done. One can only read Kindle ebooks within a Kindle device or app, both of which prevent the consumer from exporting the associated digital files. A purchased digital movie must be streamed from the user's Amazon account, and Amazon offers no mechanism to transfer the entitlement to an account belonging to someone else.

These three mechanisms—IP, contract, and code—do most of the work in explaining how vendors are able to exert post-sale control over many of today's digital IP assets and smart devices. But the New Property scholars boil the problem down to a single concept: ownership (or lack thereof). They see these mechanisms as fundamental attacks against the idea that a consumer can buy a product outright and then do whatever he wants with it—sell it, bequeath it, tinker with and improve it. And they view such business models as thinly veiled attempts by New Property vendors to extract perpetual rents, invade users' privacy, and squelch potential competition from resale markets and aftermarket vendors.

While agreeing with their framing, I'll offer an additional synthesis: verticality. As explained above, when a vendor conveys title to an asset, she loses control over it. As a matter of property law, she can no longer prescribe how it may be used or even, unless the buyer has granted her back some kind of continuing interest, touch it. It matters not that she once owned the item; if she tries to possess it again, she'll be treated like any other horizontal peer that tried to violate the new owner's right of exclusion.

If the vendor wishes to maintain control over the asset, she can instead structure the transaction as a lease or a license. By retaining title and granting the other party a lesser interest, she can maintain a vertical position over the resource (and thus over the new resource-holder). But doing so carries downsides. She must keep the resource on her books, adding to her inventory risk, and bear the loss if the tenant or the licensee damages or loses the chattel. She must create a mechanism to collect rents or royalties and find a way to repossess the article

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com/2023/10/06/miku_baby_monitor/ [https://perma.cc/4BQ3-67ML]; *see also* Todd R. Weiss, *FTC Urged to Stop Tech Makers Downgrading Devices After You've Bought Them*, The Register (Sept. 6, 2024), https://www.theregister.com/2024/09/06/consumer_ftc_software_tethering/ [https://perma.cc/2AT4-887E] (detailing efforts to combat such practices).

if the consumer falls into arrears. Like having an adult child who failed to launch, she's perpetually on the hook.

Using IP, contracts, or code to exert power over products after they've left the shelf (physically or virtually) mimics the kinds of vertical controls previously available only to lessors and licensors. Such mechanisms leave vendors with strings attached to consumer chattels, even where title has passed to consumers and vendors retain no residual property interests. They allow those who deal in the New Property to have it both ways.

As we'll see in the next Part, such verticality also helps to explain why the internet remains unpropertied.

II
The Internet Is (Still) Unpropertied

To recap, the early debate over cyberproperty focused on whether cyber-resources should qualify as property in the first place and, if so, whether resource-holders should enjoy the same rights of exclusion that apply to other forms of property. Those questions were effectively answered by courts. Cyber-resources like websites, email services, domain names, and even social media accounts did indeed represent property. Those who held such resources could therefore prevent others from taking or interfering with them through the property-based torts of conversion and trespass. But the viability of a conversion claim would depend on the jurisdiction, and trespass claims would lie only for material interference or physical damage.

The New Property scholars expanded the debate to encompass user- or consumer-held property and analyzed the vertical dimension of such property in the digital age. They saw the crucial issue as one of ownership and identified the strings providers used (IP, contracts, and code) to undermine it. Yet, unlike those who participated in the first debate, the New Property scholars didn't fix their sights on cyberproperty. They focused primarily on digital IP and smart devices. And although such resources can sometimes overlap with cyber-property, they are distinct.

Why is this distinction important? Because smart devices are physical in nature, and digital IP assets often have physical analogs. Even more importantly, they are not inexorably service-based. As a result, options always exist for severing those vertical strings, establishing traditional ownership, and enjoying all the rights and freedoms such ownership provides.

For example, consumers can buy physical books instead of ebooks, DVDs in place of digital movies, and vinyl records over monthly streaming services. They can purchase perpetual licenses to software rather than software subscriptions. They can reject devices that are too smart for their own good in favor of old-fashioned "dumb" devices that don't spy on them or lock them into permanent relationships with vendors. Or they can throw caution to the wind by "jailbreaking" their smartphones, smartwatches, and smart cars to get the best of both words.

True, such alternatives may not be available for some items. Streaming platforms like Netflix are increasingly inking exclusive streaming deals that prevent studios from releasing the same shows on DVD.[89] Some vendors, like Adobe, offer their applications only through software subscriptions.[90] And some smart devices are useless without the provider's IP or services.[91]

But while it may not be possible to find an unencumbered version of every individual SKU or product when it comes to digital IP or smart devices, it is always possible to find substitutes within the same *class*. Adobe might not offer perpetual licenses to Photoshop, but the vendors of alternative photo-editing applications like Luminar[92] and GIMP do.[93] Netflix might never release *The Midnight Gospel* on DVD, but DVDs of countless other animated series can be purchased and owned forever. And as a last result, a person could create or build her own IP asset or device to ensure that she and she alone can fully control it.

Yet, as I will show in this Part, such options are not available for cyber-resources. No stable substitutes exist for websites, domain names, social media accounts, or other cyber-assets. Nor can one be certain that if she simply builds her own networked resource, she can fully own it. The argument—indeed

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89 *See* Lindsay Kusiak, *Which Streaming Movies and Shows Get to Go to DVD and Blu-Ray?*, THEWRAP (May 1, 2024), https://www.thewrap.com/streaming-movies-shows-dvd-blu-ray-physical-media/ [https://perma.cc/4BKA-KPZH].

90 Stephen Shankland, *Adobe Kills Creative Suite, Goes Subscription-Only*, CNET (May 29, 2014), https://www.cnet.com/tech/tech-industry/adobe-kills-creative-suite-goes-subscription-only/ [https://perma.cc/9F3D-6C2E].

91 For example, a smart assistant device that can stream music or check on the weather.

92 *See Luminar Pricing*, LUMINAR NEO, https://skylum.com/luminar/pricing [https://perma.cc/S2HB-ASZU] (last visited Nov. 19, 2024).

93 *See About GIMP*, GIMP, https://www.gimp.org/about/introduction.html [https://perma.cc/2Z55-G5Y7] (last visited Nov. 19, 2024).

the central thesis of this Article—is that ownership is not merely lacking in cyberspace; it is impossible.

In this Part, I'll develop that thesis by making and defending the following five claims:

(1) Services inexorably give rise to property interests.
(2) The internet is a perfectly service-based system.
(3) The universe of cyberproperty consists entirely of licenses, entitlements, and other non-title interests.
(4) A society that lacks private property is one in which all property interests consist of leaseholds, licenses, and other non-title interests.
(5) A perfectly service-based system is functionally indistinguishable from a society that lacks private property.

Now, onto the claims.

* * *

Claim 1: *Services inexorably give rise to property interests.*

Ironically, to prove that the internet is unpropertied, it is first necessary to establish that it is actually quite propertied. Of course, in that statement, I am referencing property in two different forms: title and interest.

One can own a resource outright (title), or one can merely possess some form of right to it (interest). In fact, title (ownership) is simply one type of interest—the strongest and most durable.[94] But the distinction between a title interest (one owns the resource itself) and a non-title interest (one does not) is sufficiently important that we can place the two into separate classes. It is not merely a difference in degree; it is a difference in kind.

Much casual conversation and even judicial language elides the critical distinction between owning property vs. merely holding a property *interest*. That distinction is important because it is commonly assumed that services and property are worlds apart, that services do not and cannot give rise to property rights.[95] But that is not so.

Consider again the case of *Kremen v. Cohen*. In that case, you'll recall, the Ninth Circuit held that because a domain name is an interest capable of precise definition and exclusive

94 11 THOMPSON ON REAL PROPERTY § 91.02 (David A. Thomas ed., 3d ed.), LexisNexis (database updated Apr. 2025).

95 *See, e.g.*, Network Sols., Inc. v. Umbro Int'l, Inc., 529 S.E.2d 80, 86 (Va. 2000); Dorer v. Arel, 60 F. Supp. 2d 558, 559–61 (E.D. Va. 1999).

control, it constituted personal property.[96] Thus, Kremen, who owned Sex.com, could sue Cohen (and Kremen's registrar) for tortiously converting it.[97]

But what did Kremen really own? He didn't own the domain name itself, at least not in the way one can own a car or even a share of common stock. Registrants must pay annual fees to keep their domain names, and those who fail to do so quickly lose their assets.[98] Registrars also can, and do, impose various obligations on registrants, such as preventing registrants from using domain names to host illegal or offensive websites.[99] Such maintenance fees and post-acquisition controls are inconsistent with the freedoms owners enjoy in their title-held assets.

The correct assessment, therefore, is that when one "purchases" a domain name, he merely leases or licenses it and thereby obtains an exclusive leasehold, license, or other entitlement. Yet, the non-title nature of Kremen's interest proved no barrier to bringing a conversion claim when others tried to take it. One can steal a leased boat just as surely as one can steal a boat that the victim owns outright. The victim has a conversion claim in either circumstance, whether the thief converted his property or his property interest.[100]

Thus, we can begin to see how services give rise to property interests. When a party purchases or otherwise acquires a right to receive or access services, he acquires a license, privilege, or entitlement, each of which could be considered a property interest.

To illustrate, suppose you contract with a plumber to fix your sink and place a deposit on the work. No property would seem to be in play, and yet you've acquired a legal right to receive his services. According to the Restatement of Property, a "legally enforceable claim of one person against another, that

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96 Kremen v. Cohen, 337 F.3d 1024, 1029–30 (9th Cir. 2003).

97 *Id.*

98 *See* MARK E. JEFTOVIC, MANAGING MISSION-CRITICAL DOMAINS AND DNS 22–26 (2018).

99 *See* Nicholas Nugent, *Masters of Their Own Domains: Property Rights as a Bulwark Against DNS Censorship*, 19 COLO. TECH. L.J. 43, 64–78 (2021).

100 *See* St. John's Univ. v. Bolton, 757 F. Supp. 2d 144, 177–78 (E.D.N.Y. 2010) ("'[C]onversion is concerned with possession, not with title,' and a plaintiff need not have title to the property allegedly converted in order to make out a claim for conversion." (quoting State v. Seventh Regiment Fund, Inc., 774 N.E.2d 702, 710 (N.Y. 2002))); *see also* Am. Online, Inc. v. IMS, 24 F. Supp. 2d 548, 550 (E.D. Va. 1998) ("One who commits a trespass to chattel is liable to its rightful *possessor* for actual damages suffered by reason of loss of its use." (emphasis added) (quoting Vines v. Branch, 418 S.E.2d 890, 894 (Va. 1992))).

the other shall do a given act or shall not do a given act" constitutes a property interest.[101] What about situations where parties are permitted to use a provider's services, but the provider can terminate at any time? Incidentally, this description applies to many cyber-resources, like email accounts, that are both freely given and freely revocable. The Restatement would call that a "privilege," which it also classifies as a species of property interest.[102]

Because services alter the legal relationships between parties, they inevitably create interests in the form of rights, privileges, entitlements, power, or immunities. But whatever we call such entitlements, and whether they're costly, free, exclusive, nonexclusive, binding, or revocable, they all qualify as property interests under the broad formulation of the Restatement:

> The word "interest" is used in this Restatement both generically to include varying aggregates of rights, privilege, powers and immunities and distributivity to mean any one of them.[103]

As the Ninth Circuit put it in *Kremen*, "Property is a broad concept that includes 'every intangible benefit and prerogative susceptible of possession or disposition.'"[104] Call it the principle of inescapable property. Like smoke billowing from a moving locomotive, services can't help but emit property interests as they go.

Or, to take a non-cyber example, priority review vouchers entitle pharmaceutical companies to expedite the FDA review process for new drugs—that is, to obligate the FDA to perform a service.[105] Such entitlements can be exceedingly valuable, and pharmaceutical companies have been known to buy and sell vouchers on the secondary market for tens of millions of dollars.[106] Firms are even required to report the sale of such

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101 RESTATEMENT (FIRST) OF PROP. § 1 (AM. L. INST. 1936).

102 *Id.* § 2 ("A privilege . . . is a legal freedom on the part of one person as against another to do a given act or a legal freedom not to do a given act.").

103 *Id.* § 5.

104 Kremen v. Cohen, 337 F.3d 1024, 1030 (9th Cir. 2003) (quoting Downing v. Mun. Ct., 198 P.2d 923, 926 (Cal. Dist. Ct. App. 1948)).

105 *See* Michael Mezher, Zachary Brennan & Alexander Gaffney, *Regulatory Explainer: Everything You Need to Know About FDA's Priority Review Vouchers*, REGULATORY FOCUS (Feb. 25, 2020), https://www.raps.org/news-and-articles/news-articles/2017/12/regulatory-explainer-everything-you-need-to-know [https://perma.cc/5GN2-CLUK].

106 *See id.*

assets to the FTC under the Hart-Scott-Rodino Act where the total value of the transaction exceeds $100 million.[107]

That service-based entitlements are property interests can be seen in cases where courts have protected them from horizontal interference by allowing claims for trespass and conversion to proceed.[108] It is also supported by state and federal laws that define "property" as "anything of value," including "services" and "contract rights";[109] by cases holding defendants liable for converting property by obtaining computing services to which they were not entitled;[110] and even by the Supreme Court's Takings and procedural due process jurisprudence.[111]

This is not to say that all service-based property interests are protected under the Takings Clause or that due process protections extend to every conceivable interest. The Court must draw, and has drawn, the line somewhere, requiring property interests to meet different criteria to qualify for protection in different constitutional contexts.[112] Some might also note that licenses are typically not regarded as property interests in some property taxonomies.[113] Yet I make my claim not from positive law but from theory, by engaging in a bit of property deconstructionism. All property interests can be seen to lie along a spectrum, from the humble nonexclusive license to browse another party's website to the mighty title to a field in fee simple absolute. All are property interests in the pure, theoretical sense.

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107 *See, e.g.*, *AstraZeneca Agrees to Buy US FDA Priority Review Voucher from Sobi*, AstraZeneca (Aug. 22, 2019), https://www.astrazeneca.com/media-centre/press-releases/2019/astrazeneca-agrees-to-buy-us-fda-priority-review-voucher-from-sobi-22082019.html [https://perma.cc/5F3B-ZMWH].

108 *See supra* subpart I.B.

109 *E.g.*, Ind. Code Ann. § 35-31.5-2-253 (West 2025).

110 *See, e.g.*, Am. Online, Inc. v. LCGM, Inc., 46 F. Supp. 2d 444, 451 (E.D. Va. 1998); *cf.* Moser v. State, 433 N.E.2d 68, 70–71 (Ind. Ct. App. 1982) (upholding conviction for criminal conversion when defendant obtained cable television without paying).

111 *See* Goldberg v. Kelly, 397 U.S. 254, 262 n.8 (1970) ("It may be realistic today to regard welfare entitlements as more like 'property' than a 'gratuity.'"); Coll. Sav. Bank v. Fla. Prepaid Postsecondary Educ. Expense Bd., 527 U.S. 666, 673 (1999) (suggesting that a party need only demonstrate the deprivation of some interest that entails a "right to exclude others" for that interest to be protected from an uncompensated taking and thus recognized as constitutional property for purposes of the Fifth Amendment).

112 *See generally* Thomas W. Merrill, *The Landscape of Constitutional Property*, 86 Va. L. Rev. 885 (2000).

113 *See, e.g.*, Peter E. Fisch & Salvatore Gogliormella, *Differences Between Leases and Licenses of Real Property*, N.Y. L.J., May 28, 2024, at 5 ("A license does not constitute a real property interest.").

Moreover, just because property interests emerge from services doesn't mean they are always stable or irrevocable. A service entitlement can exist only for as long as the relevant provider continues to perform the service, and there are real limitations to keeping that up. First, there are legal limitations. If a person or firm wished to retire and no longer provide services to anyone, the Thirteenth Amendment prevents the state or any private party from forcing them to do so. Even if a firm decided to stay in business, only a fraction of industries in the United States are subject to the "duty to serve" requirement of common carriage.[114] Second, there are practical limitations. Firms fail, people die, products and services change their shape over time. The vicissitudes of life all but guarantee that no service-based entitlement can remain stable or even extant the way that land, physical chattels, or even money can.

These limitations reveal a corollary to the above claim. Services inexorably give rise to licenses and other non-title interests, yes. But it's also the case that services can *only* give rise to licenses and their ilk. That is, the property interests that services spit out must always fall short of title. Just because property exists doesn't mean that one can own it.

Claim 2: *The internet is a perfectly service-based system.*

That the internet consists of services seems obvious enough. For Jane to send a message to Vikram through the internet—say, an email—she must rely on multiple service providers, from her own email operator (e.g., Gmail) to Vikram's (e.g., Proton Mail). Even if she and Vikram are scrappy makers who operate their own email servers, they must still rely on a chain of network service operators to ferry packets between them. Countless resources found and used online, from search engines to online banking to learning management systems, constitute services. And many of the technical terms surrounding internet applications and infrastructure— denial of service (DoS), short message service (SMS), service level agreement (SLA), etc.—betray the internet's service-oriented nature.

Contrast this dynamic with various resources that can be found offline. Books, buildings, parks, paintings—all can exist

114 Christopher S. Yoo, *Common Carriage's Domain*, 35 YALE J. ON REGUL. 991, 996 (2018).

and be enjoyed without needing some other person or machine to continually perform actions. A lessee, for example, can often take full advantage of a rented house, even if her lessor never lifts a finger. And if they can manage to tear themselves away from their internet-connected screens, a group of kids can put a simple soccer ball to use for hours of fun and exercise. No services required.

One way of articulating this difference is to categorize a system as either "service-based" or "non-service-based." In the former, resources are generally tied to and depend on services; in the latter, resources generally are not and do not.

By these definitions, I don't mean that a resource in a service-based system merely depends on services to be *useful*. Many offline resources depend on or are enhanced by accompanying services to one degree or another. A trash can, for instance, has limited utility unless its owner pays someone to empty it once a week. And blenders and microwaves depend on electricity (typically delivered as a service) to perform their primary functions.

Rather, I mean that in a service-based system, a resource depends on the continued provision of service to even *exist*. Government entitlements serve as illustrative examples. Social security benefits, veteran health care, and priority pharmaceutical review vouchers are meaningless unless the SSA, VA, and FDA, respectively, continue to operate and provide the services that fulfill those entitlements. In the private sector, plane tickets, cable TV subscriptions, and gift cards for massage therapy function similarly. Such privileges can be reified only if someone else *does something*.

As the above examples illustrate, service-based systems are nothing new. They have existed in real space for as long as the monarch has promised to protect his subjects in exchange for their agricultural labor, and even before then. But where the internet distinguishes itself is that it is a *perfectly* service-based system. Real space contains a mix of service-dependent and service-independent resources. The knight's pledge to serve the king in battle may be a service-dependent resource, but his sword is not. It can exist for hundreds or thousands of years as humans and civilizations rise and fall around it. Smartphones can likewise be used entirely offline—that is, without mobile calling or internet service—whether to play games or act as paperweights.

Not so with cyber-resources. They are entirely the product of software running on servers and signals flowing through network routers, which represent hosting and network services,

respectively. Turn off those servers or routers, and any cyber-resource will instantly vanish.

Not just that, but those underlying services are themselves the product of other cyber-resources—that is, of other services. Accounts, aliases, avatars, reputational points, tokens, and entitlements depend on the apps and websites that operationalize them. But those apps and websites themselves depend on other services and cyber-resources to operate. They depend on hosting services. Those hosting services, in turn, depend on network connectivity in the form of packet routing and transport. They also depend on IP addresses and domain names, along with the DNS resolution services that translate those identifiers into unique cyberspatial locations.

Such core infrastructural resources are foundational. In a sense, they are the primitives, the building blocks from which all cyberspace is built. But it would be a mistake to therefore regard them as somehow independent or self-sufficient. They are themselves the product of services and cannot exist without them. A domain name, for example, depends on resolution services provided by registry operators and authoritative nameservers to continually point requesting users to its associated IP addresses.[115] IP addresses likewise depend on regional internet registries to map them to originating networks and on the global community of network operators to route communications.[116] Network operators depend on each other for transit and peering services.[117] And all of those services, in turn, depend on each other as well as on hosting services and even websites and other applications.

Each service-based building block depends on other service-based building blocks. At no point can you reach some bedrock of non-cyber-resources that would enable you to participate or even exist in cyberspace without depending on services provided by others. It's services, all the way down.

A perfectly service-based system can therefore be defined as a system in which no resource can be found that is not the product of another service and that does not depend on that service for its continued existence. As we can see, the internet meets this definition.

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115 *See* Nugent, *supra* note 99, at 49–56.

116 *See* Nugent, *supra* note 30, at 592–96, 599–602.

117 *Id.* at 599–602.

Claim 3: *The universe of cyberproperty consists entirely of licenses, entitlements, and other non-title interests.*

My third claim follows logically from the first two. If the only property interests that flow from a service are licenses and similar entitlements, then the only property interests that could exist in cyberspace are non-title interests. No title, no ownership.

As explained in Part I, the early cyberproperty debate concerned itself almost exclusively with whether cyber-resources constituted property and, if so, to what degree providers should be able to exclude others from that property. It therefore focused on provider-held property and its horizontal dimension, largely ignoring user-held property and its vertical dimension. It took the New Property scholars to bring those subjects to the foreground.

At first glance, that omission might seem perplexing. After all, it isn't only providers that can possess cyber-resources (websites, email services, domain names, etc.). Users can also possess many kinds of cyber-resources, (accounts, tokens, virtual currencies, etc.) that hold significant personal or commercial value. If cyber-resources should not be recognized as property in the first place, as some argued, wouldn't that leave users without any recourse against anyone who stole or interfered with their online stuff?[118] Preventing website operators from excluding "trespassers" from their otherwise public sites might or might not ensure an open internet, but preventing users from excluding others from their accounts and digital resources would seem likely to produce only chaos.

Classifying cyber-resources as "not property" would also leave users vulnerable to the whims of providers. When a consumer holds a property interest in a resource that falls short of title, her provider retains a measure of control over the resource, certainly. That's the vertical dimension of property we discussed.[119] But that power is still constrained by the scope of her lesser property interest. She might lease, rather than own, her apartment. But that doesn't mean her landlord can simply enter her residence whenever he feels like it. Paying $139 for

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118 Of course, if the thief proceeded to impersonate the victim, use her trademarks, or interfere with her business relationships, the victim might be able to bring other causes of action. But absent these additional factors, in the event of a simple misappropriation, the victim's only legal recourse would be under property law.

119 *See supra* subpart I.C.

a copy of Windows might get her only a nonexclusive license to the software. But if that license is perpetual, Microsoft can't thereafter take the software back.

But if cyber-resources were not property at all, then providers could take them back at any time and for any reason. No one could be certain of holding onto anything in cyberspace. Why did the early debate, which contemplated the abolition of cyberproperty, ignore these important considerations? A few reasons, I think.

For one, scholars may have assumed that even if users could not own their cyber-resources, and even if they possessed no property rights in them, users could generally expect to hold onto them in ways that approximated property rights. Many people have used the same email address for decades, and the careers of many influencers and content creators could not exist were it not possible to depend on static usernames and other online resources. Providers *want* repeat customers and therefore have strong economic incentives to provide them with stable, almost permanent cyber-resources. More than that, providers often play an important role in protecting users' assets from other users who might try to take them, thus creating a sort of privately enforced right of exclusion.[120]

For another, scholars may have taken it for granted that there will always be alternatives. X (Twitter) might exploit the absence of property rights in cyber-resources by taking your alias if it later wants it, but Mastodon might not. Fortnite might prevent you from reselling the tokens you earned or bought, but Roblox might encourage secondary markets. You can therefore pick and choose from an internet full of providers to find *some* entity that will give you the stability you crave in your cyber-possessions.

But perhaps the primary reason some scholars thought it unnecessary to provide users with any property rights in their cyber-resources was that they assumed that any beleaguered user always had a trump card up her sleeve: vertical integration. An open internet meant not only that any person could access any otherwise open space but also that she could create her own. Nothing prevented users from standing up their own websites, email servers, or other applications. And so, if no provider will provide a user with a cyber-resource that has the

120 *See* James Grimmelmann, *Virtual World Feudalism*, 118 YALE L.J. POCKET PART 126, 128–29 (2009).

stability of a true chattel, the user could always manufacture her own, giving her all the permanency she wants.[121]

Unfortunately, the perfectly service-based nature of the internet removes this trump card. No user can ever be truly self-sufficient in cyberspace the way she can in real life. Standing up her own online service (digital realty) would indeed enable her to create her own digital identity and digital chattels. But that service would always depend hosting services, likely provided by another. Even if she bought the necessary hardware to self-host (vertical integration), her self-hosting activities would still depend on core infrastructural resources and services (IP addresses, domain names, network connectivity, packet routing, etc.), none of which she could fully supply by herself. Vertical integration may be a solution in real space, but it eventually reaches a dead end in cyberspace.

This dead end is most apparent when it comes to online speech. As I examined in prior work, the ability of providers to revoke core infrastructural resources, coupled with users' inability to create their own substitutes, is increasingly being exploited to boot unpopular speakers from the internet altogether.[122] I called this phenomenon "viewpoint foreclosure."[123] But the concept also applies to cyberproperty. If there are no property rights to be had in cyber-resources, then the impossibility of fully vertically integrating means that there is ultimately no guarantee that anyone, whether users or providers, can hold onto—and thus own—anything in cyberspace.

Fortunately, as described above, courts have refrained from classifying cyber-resources as "not property" or declaring that holders possess no property interests in them.[124] On the contrary, most courts have recognized the rights of both providers and users to exclude others from their cyber-resources, grounding those rights in the property interests holders possess in those resources. But as demonstrated, such property interests are narrowly scoped. They are licenses, privileges, or entitlements rather than title. When a person obtains an

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121 Although not a cyberproperty skeptic himself, Joshua Fairfield stated this assumption in various ways: "Cyberspace is infinite, or practically so. People can create more space for themselves." Fairfield, *Virtual Things*, *supra* note 56, at 1064. "If one email address is taken, another can be invented." *Id.* at 1068. "If other people are entitled to stop me from speaking on their virtual 'real estate,' conversely, I am able to say what I like on mine." *Id.* at 1096.

122 *See generally* Nugent, *supra* note 30.

123 *Id.* at 580–82.

124 *See supra* subpart I.B.

account, a username, a token, or a domain name from an online service provider, she merely leases or licenses it; she does not own it.

This property-lite treatment means that users enjoy standard horizontal protections for their property. It's why registrants like Kremen can successfully bring conversion claims when others try to steal their domain names and why warring influencers (i.e., users) can appeal to courts to decide whom a social media account rightly "belongs to."

But it also means that providers always retain vertical power over the same property. Call it the principle of inexorable verticality. It's why registrars can force customers to pay annual fees to keep their domain names and further tell them what kinds of websites they may host. It's also why proving in court that you, rather than another user, "own" an Instagram account doesn't mean that Meta can't take it away from you at any time.[125]

Claim 4: *A society that lacks private property is one in which all property interests consist of leaseholds, licenses, and other non-title interests.*

My next claim focuses on physical space—in particular, on the notion of a society without private property. Of course, such a society is only theoretical. No written records exist of a perfectly unpropertied society. Communist and socialist countries recognized the right of citizens to own personal property; it was only title to "productive property" like land, factories, and businesses that was abolished.[126] Hunter-gather societies likewise shared communal resources such as land and water but allowed individuals to own essential items like food, clothing, and tools.[127] And even though sixteenth-century nuns had to take vows of poverty, renouncing worldly possessions, they could still retain personal items, such as religious texts and

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125 *See* Jason Koebler, *X's Objection to the Onion Buying InfoWars Is a Reminder You Do Not Own Your Social Media Accounts*, 404 MEDIA (Nov. 26, 2024), https://www.404media.co/xs-objection-to-the-onion-buying-infowars-is-a-reminder-you-do-not-own-your-social-media-accounts/ [https://perma.cc/R8WV-FL5R] ("Elon Musk's lawyers argued that X has 'superior ownership' of all accounts on X . . . .").

126 *See* Katherine Verdery, *The Property Regime of Socialism*, 2 CONSERVATION & SOC'Y 189, 191–92 (2004).

127 Martin J. Bailey, *Approximate Optimality of Aboriginal Property Rights*, 35 J.L. & ECON. 183, 184, 193 (1992); James Woodburn, *Egalitarian Societies*, 17 MAN 431, 442 (1982).

utensils.[128] But theorizing about a completely unpropertied society is nonetheless useful because doing so yields a couple useful observations.

First, it would be impossible to abolish all property interests. Once again, a bit of property deconstructionism is in order here. Suppose a Communist state emerged that was determined to extend the reach of state ownership to *all* assets—land, houses, automobiles, even clothing. The state determined which resources should go to which citizens, and no one could assume that the shirt he wore today wouldn't be reallocated to his neighbor tomorrow. There would be no private ownership and thus no private property.

Yet such a society would still contain private property *interests*. If the state allowed a citizen to live in a particular cottage, she would have a form of property interest in her dwelling. If she could live there until she died, we might call that a life estate. If for only a fixed period (say, a year), her interest would be akin to that of a traditional leasehold. Or, if the state could kick her out at any time, she'd have something that resembled a tenancy at will or an exclusive, freely revocable license. In any case, if the state permitted her and her alone to stay in the cottage and provided legal recourse if a trespasser intruded, she would have the kind of horizontal exclusion rights standard to property.

But let's go further. Suppose a large pond abutted the cottage. The state told her that she could fish in, boat on, and otherwise use the pond, but so could anyone else. She would therefore hold no power of exclusion. She would hold only the weakest right a person could claim to a resource controlled by another party: a nonexclusive, freely revocable license. Still, even that right would represent an interest in the resource, a right to use it until she was told she couldn't any longer—a modest license, privilege, or entitlement to property, but a property interest nonetheless.

Thus, we can see another manifestation of the principle of inescapable property. No matter how hard a state might try to eliminate all property from its remit, when it allows individuals to use certain resources, even temporarily—and especially when it permits them to exclude others—it creates property interests. It can't help but do so.

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128 *See* Silvia Evangelisti, *Monastic Poverty and Material Culture in Early Modern Italian Convents*, 47 HIST. J. 1, 11–12 (2004).

Second, if a society lacks private property, then when it comes to interests in those resources, those interests must consist of leaseholds, licenses, and other non-title interests. We can arrive at this conclusion definitionally. Private property is typically defined as the right of private parties to own resources—that is, to acquire title—or to possess, exclude, use, and transfer them in ways equivalent to ownership.[129] And the universe of property interests consists of title (i.e., ownership) and non-title interests (term-limited, conditional, or revocable interests that may be exclusive or nonexclusive).

A state can certainly ban private ownership. It can declare that it and it alone owns and controls all resources and thereby eliminate title as an interest available to private parties. But as we've seen, so long as it permits its people to wear clothes, use tools, or occupy space—whether temporarily or semi-permanently, whether exclusively or in a shared manner—it creates and conveys property interests. And having dispensed with title interests (which it could eliminate), that would leave only non-title interests like leaseholds and licenses (which it could not).

Some might object that this line of reasoning places too much weight on formal definitions—in particular, on the idea that private property is equivalent to title interests. After all, a private party can "own" a non-title interest in property (e.g., a leasehold). And if a state actor in the United States took that interest away, it could potentially violate the Fifth Amendment's guarantee that "private property [shall not] be taken for public use, without just compensation."[130] Therefore, it might be more convincing to arrive at this conclusion functionally.

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129 *See Property*, BLACK'S LAW DICTIONARY (12th ed. 2024) (defining "private property" as "[p]roperty . . . over which the owner has exclusive and absolute rights"); *Private Property*, LEGAL INFO. INST. (Apr. 2022), https://www.law.cornell.edu/wex/private_property [https://perma.cc/H2PT-K4PN] ("Private property refers to the ownership of property by private parties - essentially anyone or anything other than the government."); STANLEY L. BRUE, CAMPBELL R. MCCONNELL & SEAN FLYNN, ESSENTIALS OF ECONOMICS 433 (3d ed. 2014) ("The right of private persons and firms to obtain, own, control, employ, dispose of, and bequeath land, capital, and other property."); *Private Property*, CAMBRIDGE DICTIONARY, https://dictionary.cambridge.org/us/dictionary/english/private-property [https://perma.cc/CC6T-J27Y] (last visited June 29, 2025) ("[S]omething, especially land or buildings, that belongs to a particular person or company, rather than to a government . . . .").

130 U.S. CONST. amend. V; *see* Coll. Sav. Bank v. Fla. Prepaid Postsecondary Educ. Expense Bd., 527 U.S. 666, 673 (1999) (suggesting that a non-title interest could be subject to Fifth Amendment protection provided that it is an exclusive interest).

At root, private property speaks to the vertical relationship between citizen and state with respect to resources. It concerns the right of the citizen to hold onto a resource indefinitely, the right to tell the state "no" if the latter wants to take it[131] or otherwise control it.[132] In a society where the state has abolished title, private parties might "own" their possessory interests, but no private party would own the property itself. Instead, the state would own everything. It would then have discretion whether to grant lesser interests in those resources to private parties and, if so, to define the scope of those interests.

The landlord can allow the renter to use the house for this purpose but not that one. The licensor can forbid the licensee from selling that chattel to another person or devising it to heirs. A party that owns all resources can therefore control nearly all activity related to those resources, which is to say nearly all activity. No reasonable definition of "private property" would include a situation where the state owned all resources merely because the state chose to allow private parties to "own" leaseholds, licenses, or entitlements, which it alone defined and against which it always retained a superior interest.

Claim 5: *A perfectly service-based system is functionally indistinguishable from a society that lacks private property.*

We've now reached the point of convergence. As explained above, the only property interests that flow from a perfectly service-based system are non-title interests. And, as argued, the same is true of a society that lacks private property. Leaseholds, licenses, and entitlements abound, but title is nowhere to be found. Among the citizenry, there is no such thing as ownership. As such, at least in terms of how participants hold and interact with property, the two systems are functionally indistinguishable.

* * *

Together, these five claims establish the central thesis of this Article: that the internet lacks private property.

To be sure, it contains property *interests* and plenty of them. Because cyber-resources are capable of precise definition and exclusive control, because they pack real world value, both economic and personal, providers and users alike can

131 Subject to the sovereign power of eminent domain.

132 Subject to generally applicable restrictions on how all citizens may use their property.

hold property interests in them. They can thus often exclude others from that property and bring property-based claims when other parties trespass upon or interfere with it. Their horizontal property rights remain largely intact.

But in cyberspace, the prospect of vertical control is ever-present. The New Property scholars have shown us how traditional property ownership is being undermined in the case of IP assets and smart devices. They offer prescriptions for reclaiming ownership by severing or reforming the IP, contracts, or code that providers use to retain control over those resources. But the New Property scholars have a distinct advantage in their fight: the possibility of ownership. If a consumer opts for a vinyl record over a Spotify subscription to take advantage of the first sale doctrine or jailbreaks her iPhone to put Apple's code back in its place, she's left with a physical chattel. She's left with title.

Those cheat codes are unavailable in cyberspace. Cyber-resources can likewise be controlled by IP, contracts, and code. And even if the strings of IP and contracts were somehow severed, vertical control would remain because one can never remove code from the equation. Without title to fall back on, another party always possesses a superior interest in a cyber-chattel. In cyberspace, ownership, and thus private property, are effectively impossible.

III
What Property Brings

To say that the internet is unpropertied, or that society is also becoming increasingly unpropertied as it moves online, is not, by itself, a normative claim. For property has its skeptics.

The Marxist critique, for example, views property, especially when it comes to private ownership of the means of production, as a tool of exploitation.[133] By this account, the capitalist class uses property to control resources and labor, creating an unequal society in which wealth is concentrated in the hands of a few.[134] Others, approaching the issue from an environmental perspective, have argued that property leads to the exploitation of natural resources without regard to environmental

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133 *See* Marx & Engels, *supra* note 8, at 85 ("[M]odern bourgeois private property . . . is based on class antagonisms, on the exploitation of the many by the few.").

134 *Id.*

impact.[135] And some feminists have criticized property on the grounds that it has been used primarily to perpetuate gender inequality.[136] According to some of these accounts, property has *always* been a mistake. Moving away from a property-based system, therefore, represents progress, the dismantling of a pernicious power structure in favor of a more equal, just, or responsible society.

Others are less absolutist in their critique. They view property as having served an important role in the past, such as facilitating agriculture or stabilizing trade.[137] For them, property represents not an intrinsic evil but an increasingly archaic device for ordering society.[138] Like woodburning stoves and the internal combustion engine, we can all be thankful for the past role they played in improving human welfare without basing our future on them.[139] Newer, more efficient systems for optimizing welfare have been made possible by technological advances, and we would be wise to upgrade our societal software accordingly.

Thus, before we can evaluate whether an unpropertied internet is a cause for concern, we first need to understand the normative case for property. I'll state up front that my aim in this Part is modest. To mount a full defense of property, giving fair treatment to its critics and addressing each of their concerns, would not be possible in a single article, let alone an article focused primarily on cyberspace. And others, writing more squarely in the arena of property theory, have already done a better job of responding to property's critics than this technology law professor could hope to do.[140]

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135 *See, e.g.*, VANDANA SHIVA, RECLAIMING THE COMMONS: BIODIVERSITY, INDIGENOUS KNOWLEDGE, AND THE RIGHTS OF MOTHER EARTH (2020); MURRAY BOOKCHIN, THE ECOLOGY OF FREEDOM: THE EMERGENCE AND DISSOLUTION OF HIERARCHY (rev. ed. 1991).

136 *See, e.g.*, VANDANA SHIVA, STAYING ALIVE: WOMEN, ECOLOGY, AND DEVELOPMENT (2010); SILVIA FEDERICI, CALIBAN AND THE WITCH: WOMEN, THE BODY AND PRIMITIVE ACCUMULATION (2004); Carole Pateman, *Feminist Critiques of the Public/Private Dichotomy*, *in* PUBLIC AND PRIVATE IN SOCIAL LIFE (S.I. Benn & G.F. Gaus eds., 1983).

137 *Cf.* James W. Ely, Jr., *Property Rights and Liberty: Allies or Enemies?*, 22 PRESIDENTIAL STUD. Q. 703, 704 (1992) ("Under the leadership of Chief Justice John Marshall the Supreme Court sought to encourage the formation of a national market and safeguard property rights from legislative interference.").

138 *See, e.g.*, PAUL MASON, POSTCAPITALISM: A GUIDE TO OUR FUTURE (2015); ZYGMUNT BAUMAN, LIQUID MODERNITY (2000); BERNARD SCHWARTZ, THE GREAT RIGHTS OF MANKIND: A HISTORY OF THE AMERICAN BILL OF RIGHTS 224 (Madison House 1992).

139 *See* Ely, *supra* note 137, at 703 ("[M]any scholars and jurists currently treat property rights as little more than an awkward relic of the 18th century.").

140 *See, e.g.*, MARTHA NUSSBAUM, WOMEN AND HUMAN DEVELOPMENT (2001) (emphasizing the importance of property ownership to advancing women's equality);

Instead, I will endeavor in this Part mostly to make the positive case for property. I'll do so by first addressing two of the modern critiques that focus on the relationship between property and progress. I'll then enumerate several of the timeless benefits of property, which I hope will at least implicitly address some of the economic, environmental, and feminist concerns.

A. Property Against Progress

1. *Advancing Knowledge*

> *[I]nformation wants to be free . . . .*
> – Stewart Brand[141]

A common argument against property in the digital age is that it unnecessarily hampers the enterprise of advancing knowledge. The concern is that information used to be tied to physical resources, but the internet has freed knowledge from its tangible fetters.[142] For example, to replicate and disseminate information just thirty years ago, book pages needed to be copied, CDs needed to be burned, and content promulgated by more dynamic forms of distribution, such as broadcast radio or television, could not be just as easily redistributed by consumers. The internet revolutionized the information ecosystem by enabling countless users to electronically access the same resources on demand while also providing the means for those same users to make and redistribute digital copies of their own.

At first, many content owners either resisted these innovations, such as by refusing to sell MP3s of copyrighted music,[143] or awkwardly tried to force old business models onto the new internet, such as by offering only paid encyclopedia subscriptions.[144] Frustrated by the old guard's refusal to adapt, users

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JEREMY WALDRON, THE RIGHT TO PRIVATE PROPERTY (1988) (making the economic case); JULIAN L. SIMON, THE ULTIMATE RESOURCE (1981) (responding to the environmental critique).

141 Stewart Brand, Discussions from the Hackers' Conference (Nov. 1984), *in* WHOLE EARTH REV., May 1985, at 44, 49.

142 *See* JAMES BOYLE, THE PUBLIC DOMAIN: ENCLOSING THE COMMONS OF THE MIND 60–61 (2008).

143 *See* Amy Harmon, *Grudgingly, Music Labels Sell Their Songs Online*, N.Y. TIMES (July 1, 2002), https://www.nytimes.com/2002/07/01/business/technology-grudgingly-music-labels-sell-their-songs-online.html [https://perma.cc/K9Q7-MM5K].

144 *See* Adam Clark Estes, *The Sun Sets on the Encyclopedia Britannica Print Edition*, THE ATLANTIC (Mar. 14, 2012), https://www.theatlantic.com/business/archive/2012/03/sun-sets-encyclopedia-britannica-print-edition/330569/ [https://perma.cc/B5Q3-X5UQ].

took matters into their own hands by making and distributing unauthorized copies of content through file-sharing services like Napster and LimeWire.[145] These developments, in turn, spurred industry groups like the Recording Industry Association of America and the Motion Picture Association to crack down on illegal sharing all the more vigorously.[146] These same groups also collaborated with technology providers to invent new forms of digital rights management (DRM) controls that could not distinguish between infringement and fair use and therefore limited consumers' ability to share information even more than in the offline space.[147]

It was against this backdrop that the Digital Commons movement was born. That movement is rooted in the belief that knowledge, information, and digital tools should be widely available and that the over-propertization of those resources unnecessarily stifles the generative nature of the internet.[148] Leveraging the notion of a "commons"—a resource or space that is accessible to all members of a community and over which no individual possesses exclusive rights—the Digital Commons movement developed useful new sharing mechanisms, such as the Creative Commons license.[149] That license, in turn, permits the public to freely share the content of more than fifty million pages on Wikipedia, one of the largest public repositories of information in the world.[150] The Digital Commons movement also played a key role in the development of open-source software licenses that make software projects and their source code freely available to those who wish to use them or learn from them.[151] And the Linux operating system, which powers

145 *See* JACK GOLDSMITH & TIM WU, WHO CONTROLS THE INTERNET? 107–09 (2006).

146 *See RIAA v. The People: Five Years Later*, ELEC. FRONTIER FOUND. (Sept. 30, 2008), https://www.eff.org/wp/riaa-v-people-five-years-later [https://perma.cc/9ANJ-RX24] (describing the RIAA's aggressive tactics to fight online copyright infringement).

147 *See* Edward W. Felten, *A Skeptical View of DRM and Fair Use*, COMMC'NS ACM, Apr. 2003, at 57.

148 *See* Mélanie Dulong de Rosnay & Felix Stalder, *Digital Commons*, INTERNET POL'Y REV. (Dec. 17, 2020), https://www.econstor.eu/bitstream/10419/233108/1/1755140037.pdf [https://perma.cc/X3AZ-EBJJ] (chronicling the history of the Digital Commons movement); *see also* Eben Moglen, *The dot-Communist Manifesto*, COLUM. L. SCH. (Jan. 2003), https://moglen.law.columbia.edu/publications/dcm.html [https://perma.cc/6JNR-PG6W].

149 Dulong de Rosnay & Stalder, *supra* note 148.

150 *Id.*

151 *Id.*

more than 96.3% of websites,[152] stands as perhaps the largest monument to the success of open-source software.

Central to the Digital Commons movement is a certain skepticism of property rights that are too strongly enforced. As Lawrence Lessig, one of the movement's founders and chief advocates, said in his book, *Free Culture*, "[J]ust as a free market is perverted if its property becomes feudal, so too can a free culture be queered by extremism in the property rights that define it."[153] Richard Stallman, creator of the open-source copyleft license, went further: "Control over the use of one's ideas really constitutes control over other people's lives; and it is usually used to make their lives more difficult."[154]

Yet the commitments of the Digital Commons movement, many of which I agree with, are not inconsistent with this Article's claims. For one, as evidenced by the Lessig and Stallman quotes above, that movement is primarily concerned with *intellectual* property rather than cyberproperty. For another, figures like Lessig and Stallman seem to be primarily concerned with the fact that property systems can disproportionately benefit large corporate interest-holders at the expense of internet users.[155] My concern is just the same. The fact that online service providers, which increasingly consist of large technology companies, can so easily disappropriate users of their online resources is the driving force behind the arguments in this Article. And it is by granting users rights to their *own* property that they can be put on more equal footing with that of powerful commercial operators.

2. *Optimizing Consumption*

> *Welcome to 2030. I Own Nothing, Have No Privacy, And Life Has Never Been Better.*
>
> – Ida Auken[156]

These words, which form the title of a provocative 2016 essay published by the World Economic Forum, typify another

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152 Steven Vaughan-Nichols, *Can the Internet Exist Without Linux?*, ZDNET (Oct. 15, 2015), https://www.zdnet.com/home-and-office/networking/can-the-internet-exist-without-linux/ [https://perma.cc/A6P4-XJPZ].

153 LAWRENCE LESSIG, FREE CULTURE, at xvi (2004).

154 Richard Stallman, *The GNU Manifesto*, DR. DOBB'S J., Mar. 1985, at 30, 32.

155 *See* LESSIG, *supra* note 153, at 8, 113.

156 Ida Auken, *Welcome to 2030. I Own Nothing, Have No Privacy, And Life Has Never Been Better*, WORLD ECON. FORUM (Nov. 12, 2016), https://medium.com/world-economic-forum/welcome-to-2030-i-own-nothing-have-no-privacy-and-life-has-never-been-better-ee2eed62f710 [https://perma.cc/ABJ3-XNDF].

progressive line of attack against property: its inefficiency. In Auken's essay, she imagined a future society in which neither she nor anyone else in her city "own[s] anything."[157] Instead, "[e]verything [we] considered a product, has now become a service."[158] But this new system, Auken assured us, will be all for the best because it will optimize consumption:

> In our city we don't pay rent, because someone else is using our free space whenever we do not need it. My living room is used for business meetings when I am not here.
>
> Once in a while, I will choose to cook for myself. It is easy—the necessary kitchen equipment is delivered at my door within minutes. Since transport became free, we stopped having all those things stuffed into our home. Why keep a pasta-maker and a crepe cooker crammed into our cupboards? We can just order them when we need them. . . . [Because] products are turned into services, no one has an interest in things with a short life span. Everything is designed for durability, repairability, and recyclability.[159]

Thus, rather than manufacture a separate pasta-maker for every one of thousands of residents who might need one on occasion, some central authority could instead manufacture a few hundred units and then dynamically allocate them to, and reclaim them from, residents as needed. Not only would such a system reduce the number of pasta-makers needed, but the cost savings from that diminished production could be used to manufacture high-quality appliances that last much longer.

Although Auken's essay was intended to describe a future, utopian society, it simply depicts a more advanced form of today's sharing economy. Alternately dubbed the "circular economy," or sometimes "post-capitalism," the sharing economy aims to replace traditional, title-held property with on-demand services.[160] Such sharing systems have long existed in neighborhoods or communal settings, but the internet, for the first time, made it possible to scale those systems out to millions

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157 *Id.*

158 *Id.*

159 *Id.*

160 *See* Bernard Marr, *The Sharing Economy - What It Is, Examples, and How Big Data, Platforms and Algorithms Fuel It*, FORBES (Oct. 21, 2016), https://www.forbes.com/sites/bernardmarr/2016/10/21/the-sharing-economy-what-it-is-examples-and-how-big-data-platforms-and-algorithms-fuel/?sh=fa63a007c5af [https://perma.cc/6LKT-LJR2].

of participants in a largely anonymous and trustless manner. Already, we see the success of house-sharing platforms like Airbnb and on-demand car services like Getaround.[161] In Auken's view, all of society should be structured to operate in this circular fashion.

That transformation would obviously entail abandoning a great deal of private property in favor of services. It could even be argued that the aim of a mass-circular economy is to export the service-oriented nature of cyberspace to the *offline* world. And if such an economy would improve aggregate welfare over the status quo, why should a sentimental attachment to property stand in the way?

But before we get too enthralled with the possibilities offered by a completely service-based economy, it's worth evaluating what might be lost by moving away from a property-based system. In the rest of this Part, I'll analyze this loss by describing some of the primary—and, I would argue, unique—benefits that property brings.

B. Property's Benefits

Property—and particularly property *ownership*—provides numerous benefits both to individuals and to society at large. I'll start by describing various individual benefits before making the collective case. As will be seen in the discussion that follows, some of those benefits are tied to property ownership while others emerge simply when property is involved, even if an actor possesses only a non-title interest in that property. In other words, we'll examine property in both its horizontal and vertical dimensions.

1. *Personhood*

> *[E]very man has a property in his own person . . . .*
>
> – John Locke[162]

Most foundationally, property is central to personhood. This statement is true in multiple ways.

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161 *Id.*; *see also* Kailyn Rhone, *The Extreme Renters Who Own Nothing, Not Even Their Jeans*, WALL ST. J. (Aug. 17, 2024), https://www.wsj.com/personal-finance/renting-lifestyle-economy-cars-furniture-clothes-b7329a4a[https://perma.cc/T8MD-N4Y5] (describing an emerging trend among twenty-somethings to rent, rather than own, as many of their belongings as possible).

162 JOHN LOCKE, TWO TREATISES OF GOVERNMENT 134 (Thomas I. Cook ed., Hafner Publishing Co. 1947) (1690).

It is true in the way Margaret Jane Radin put it: "[T]o achieve proper self-development—to be a *person*—an individual needs some control over resources in the external environment. The necessary assurances of control take the form of property rights."[163] For example, as Radin explained, a person might have deep, personal connections to certain objects, such as a wedding ring or family heirloom.[164] To deny that person the ability to permanently own such objects—to insist that any possession is revocable or replaceable with other objects or with cash—is to deny her the right to be fully a person.[165]

But it is also true in another, deeper sense. Some philosophers have posited that humans possess a property interest in their own persons.[166] Termed "self-ownership," the theory states that one holds an inalienable interest in one's body, one's identity, and other aspects of one's personhood.[167] Thus, among the many distinct evils of slavery is the fact that it deprives a person of that most basic property interest: ownership of his own body, which includes his identity, the fruit of his labor, and even the fruit of his loins.[168]

Coverture, the common law doctrine pursuant to which a woman's legal identity merged with that of her husband upon marriage, likewise illustrates the centrality of property rights to personhood.[169] Under coverture, married women could not own property in their own names, and any property they acquired before or during marriage became that of their husbands.[170] A married woman also typically could not enter into contracts without her husband's consent, and any earnings she made from her labor or other means during marriage were treated as her husband's income.[171] It should therefore be easy to see how coverture dehumanized women, as their persons (both their bodies and their identities) were taken from them

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163 Radin, *supra* note 2, at 957.

164 *Id.* at 959–61.

165 *Id.*

166 *See, e.g.*, JUDITH JARVIS THOMSON, THE REALM OF RIGHTS 225-26 (1990) ("[P]eople's bodies are their First Property, whereas everything else they own . . . is their Second Property."); LOCKE, *supra* note 162, at 134 ("[E]very man has a property in his own person . . . .").

167 *See* Eric Mack, *Self-Ownership and the Right of Property*, 73 THE MONIST 520, 522–25 (1990).

168 *See* sources cited *supra* note 6.

169 *See* Carole Pateman, *Self-Ownership and Property in the Person: Democratization and a Tale of Two Concepts*, 10 J. POL. PHIL. 20, 23 (2002).

170 *Id.*

171 *See id.*

and given to their husbands. And it provides yet another illustration of how one's ability to own and control property is foundational to one's personhood.

2. *Liberty*

> *The right of property is the guardian of every other right, and to deprive a people of this, is in fact to deprive them of their liberty.*
>
> – Arthur Lee[172]

The framers saw property rights as essential to securing individual liberty,[173] a view that held sway long after their passing.[174] Evidence for this assertion is not hard to deduce. Property provides a zone of autonomy against both the state and other private parties.[175] Subject to obvious limitations like criminal laws, nuisance, and covenantal restrictions, a person who owns his house may generally act as he pleases in it. That freedom stands in marked contrast to the circumstances of a person who leases his dwelling from another. His lessor may impose various restrictions on his activities, such as prohibiting alcohol, overnight guests, or business activities within the premises.

This kind of control also extends to personal property. Although sellers generally cannot impose restraints on alienation or dictate how a buyer may use a chattel after title has been conveyed, lessors can do just that. The vertical interest they maintain in resources they lease to others gives them the power to determine how others may use those resources.[176] Thus, a dealership that sells a car to a consumer cannot require the buyer to perform regular oil changes, limit the number of miles she may drive per year, specify where she may drive, or prohibit her from selling the car to another. But a dealership that leases, rather than sells, a vehicle may control the lessee's behavior in these and other ways.

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172 ARTHUR LEE, AN APPEAL TO THE JUSTICE AND INTERESTS OF THE PEOPLE OF GREAT BRITAIN, IN THE PRESENT DISPUTES WITH AMERICA 25 (1774).

173 Ely, *supra* note 137, at 703–07.

174 *Id.*

175 *Id.* at 703 ("Protection of property rights served to create a realm of individual autonomy and thus protect citizens from potentially coercive government.").

176 *See supra* subpart I.C.

3. *Privacy*

> *Once in awhile I get annoyed about the fact that I have no real privacy. No where I can go and not be registered. I know that, somewhere, everything I do, think and dream of is recorded. I just hope that nobody will use it against me.*
>
> – Ida Auken[177]

Property owners also enjoy a degree of privacy that service subscribers and others with lesser property interests often lack. Consider again the person who leases his dwelling from another. Subject to certain limitations under state law, a landlord can reserve the right to enter the leased dwelling to inspect the premises or to ensure that the tenant is complying with the terms of the lease.[178] By contrast, a person who owns his house can generally live as a recluse. Like Boo Radley, he can shut the blinds and keep everyone out.[179] He also enjoys greater protection from the prying eyes of the state.[180] Although the Supreme Court has held that a landlord generally cannot consent on behalf of a tenant to search the tenant's premises,[181] a landlord *can* permit police to enter a rented dwelling to investigate another's apparent crime and, once inside, observe any incriminating evidence in plain view against the tenant.[182]

Or consider the plight of a homeless person—one who not only lacks title to property but further lacks any *possessory* interest in a dwelling. Outside, all her actions are potentially viewable by others. And if a kind soul should permit her to stay the night indoors, that soul need not provide her with any guarantee of privacy. The thoroughly unpropertied person is therefore thoroughly in want of privacy.[183]

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177 Auken, *supra* note 156.

178 *See* Revised Unif. Residential Landlord and Tenant Act § 701(b) (Unif. L. Comm'n 2015).

179 *See* Harper Lee, To Kill a Mockingbird 12–14 (HarperCollins 1993) (1960).

180 *See* People v. Cook, 710 P.2d 299, 303 (Cal. 1985) ("[W]e guard with particular zeal an individual's right to carry on private activities within the interior of a home or office, free from unreasonable government intrusion.").

181 *See* Chapman v. United States, 365 U.S. 610 (1961) (excluding evidence from search consented to by a landlord).

182 *See, e.g.*, State v. Koop, 314 N.W.2d 384, 387–88 (Iowa 1982).

183 *See* Jeremy Waldron, *Homelessness and the Issue of Freedom*, 2019 J. Const. L. 27, 48 (describing privacy deprivations endured by homeless persons who dwell in common areas).

4. *Free Expression*

Speech requires space.
– Derek Bambauer[184]

Property is essential to free expression. As noted above, because lessors may exert control over how their rented property is used, they may prevent lessees from using that property to engage in certain types of speech. A private convention center may decline to host the annual convention of the Democratic Socialists of America because it opposes the DSA's viewpoints. Or, having learned his lesson, Max Yasgur might refuse to rent out his 600-acre farm near Woodstock, New York, for another week of music, free love, and anti-war protests. If these event organizers cannot find a willing lessor, and if they lack their own property, their events might never go forward. To repeat the above-quoted assertion, "Speech requires space."

The Supreme Court recognized as much in *Hague v. Committee for Industrial Organization*, when it inaugurated the public forum doctrine, obligating the state to provide physical spaces in which citizens could engage in public speech.[185] Prior to *Hague*, the First Amendment had not been interpreted to require the state to permit free speech on any state-owned property.[186] The Court had earlier reasoned that just as a citizen could control who could speak and what could be said on her private property, the state, as a property owner in its own right, could likewise determine whether to allow speech on *its* property.[187] In reversing prior holdings to that effect, the *Hague* Court reasoned, "Wherever the title of streets and parks may rest, they have immemorially been held in trust for the use of the public and, time out of mind, have been used for purposes of assembly, communicating thoughts between citizens, and discussing public questions."[188] The state, therefore, has a duty to open up certain kinds of state-held property ("public fora") for citizens' speech.

One way of viewing the public forum doctrine is that it improves equity between the propertied and the unpropertied in terms of their ability to engage in public speech. To (slightly)

184 Derek E. Bambauer, *Orwell's Armchair*, 79 U. CHI. L. REV. 863, 910 (2012).

185 Hague v. Committee for Industrial Organization, 307 U.S. 496 (1939).

186 *See, e.g.*, Davis v. Massachusetts, 167 U.S. 43 (1897).

187 *Id.* at 47.

188 307 U.S. at 515.

repurpose a statement by Mark Lemley, "Public spaces sometimes provide a subsidy to the poor . . . ."[189] But more than a subsidy, public property may provide the *only* opportunity for some people to engage in public speech. A person who lacks access to a space, whether his own private space or a permissive public space, is a person who cannot express himself to the extent otherwise permitted by the First Amendment.

5. *Protection from Marginalization*

> *Fine, then. I'll just take my bat and ball and go home.*
> – Every nine-year-old boy

Property—and particularly property ownership—provides an important bulwark against marginalization. For example, as is well known, before the civil rights reforms of the mid-twentieth century, it was not uncommon for racial or religious minorities to be shut out of neighborhoods, country clubs, and even universities.[190] A landlord had just as much freedom to refuse to rent a house to an applicant because she was African American as he did to another applicant because she had bad credit.[191] Some might argue that this sad aspect of our history illustrates the kinds of harm that can emerge when property rights are too *strong*. After all, perhaps the most common argument against non-discrimination laws is that an owner should be free to do as he pleases with his property.[192]

But just as injustice can result from property rights that are too strong, it can abound when property rights are too weak. And strengthening property rights—or creating them where they did not previously exist—can be essential to remedying injustices. History is filled with the stories of groups who responded to persecution by purchasing their own property and

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189 Lemley, *supra* note 33, at 533.

190 *See, e.g.*, Leslie M. Harris, *The Long, Ugly History of Racism at American Universities*, The New Republic (Mar. 27, 2015), https://newrepublic.com/article/121382/forgotten-racist-past-american-universities [https://perma.cc/NGY4-7KA3].

191 *See* Sam Fulwood III, *The United States' History of Segregated Housing Continues to Limit Affordable Housing*, Ctr. for Am. Progress (Dec. 15, 2016), https://www.americanprogress.org/article/the-united-states-history-of-segregated-housing-continues-to-limit-affordable-housing/ [https://perma.cc/XF9B-LCDY].

192 *See* Richard R.B. Powell, *The Relationship Between Property Rights and Civil Rights*, 15 Hastings L.J. 135, 135–37 (1963) (chronicling multiple instances in which fair housing laws were opposed on the ground that they "unlawfully destroyed" the "'property rights' of landowners").

establishing their own self-supporting communities.[193] That property might include acres of land on which to build houses, raise churches, and grow crops; apartment buildings that offer housing to minorities; or simply meeting halls in which to hold rallies and encourage the fainthearted.

For example, authorities who attempted to impose their religious beliefs on recalcitrant sects in the American colonies often found their efforts thwarted by a strategy that hadn't been available in the Old World: any persecuted sect could simply move further west and create a new community.[194] And faced with unequal access to commercial establishments, capital markets, and housing in the early twentieth century, African Americans took to purchasing their own housing units and storefronts in the bustling, Black-owned district in Tulsa that came to be known as "Black Wall Street."[195]

Property ownership is essential to this ability of marginalized groups to strike out on their own. Without it, a group must rely on others (or the state) to provide it with the resources it needs, resources that might come with onerous restrictions or that might be revoked altogether if the group becomes too unpopular. Without property, an unpopular group runs the risk of being permanently marginalized.[196] Responding to feminist concerns, it could be argued that the inequality of coverture was cured not by eliminating property for everyone but by ensuring that women could acquire property of their own.[197]

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193 *See e.g.*, HANNIBAL B. JOHNSON, BLACK WALL STREET: FROM RIOT TO RENAISSANCE IN TULSA'S HISTORIC GREENWOOD DISTRICT 1–18 (1998) (describing various self-supporting African American settlements in between 1865 and 1920); MARK S. FERRARA, AMERICAN COMMUNITY: RADICAL EXPERIMENTS IN INTENTIONAL LIVING 25–36 (2019) (chronicling the self-sufficient Zoarite community in rural Ohio); Shelly Tenenbaum, *Immigrants and Capital: Jewish Loan Societies in the United States, 1880–1945*, 76 AM. JEWISH HIST. 67, 68–71 (1986) (describing the "Hebrew free loan societies" that enabled Jewish residents to obtain otherwise unavailable capital to start businesses).

194 *See* PAUL JOHNSON, A HISTORY OF THE AMERICAN PEOPLE 37–46 (HarperCollins 1998) (1997).

195 Of course, I'd be remiss if I didn't note that Black Wall Street met a horrible end in the Tulsa Massacre of 1921. *See generally* JOHNSON, *supra* note 193, at 27–80. Unfortunately, even property ownership cannot fully protect a group against violence and other illegal acts.

196 *See* Waldron, *supra* note 183, at 31 (explaining that if "*all* the land in a society [were] held as private property," as some have proposed, "the homeless person might discover in such a libertarian paradise that there was literally *nowhere* he was allowed to be").

197 *See* Bernie D. Jones, *Revisiting the Married Women's Property Acts: Recapturing Protection in the Face of Equality*, 22 AM. U. J. GENDER SOC. POL'Y & L. 91, 92 (2013) ("[W]ith the passage of the Married Women's Property Acts, wives

As Christopher Serkin puts it, "[Property] gives people the means to be self-sufficient without the State, and so is a necessary precondition for genuine political participation."[198]

6. *Wealth*

> *[P]olicies that successfully address disparities in home-ownership rates and returns to income are likely to be the most effective in reducing the racial wealth gap.*
>
> – Laura Sullivan et al.[199]

Property ownership plays a crucial role in building wealth, both within one's lifetime and generationally. That statement might seem tautological: *Isn't wealth measured by the quantity of one's assets, which presupposes property ownership?* Not necessarily. One can have many possessions yet hold title to none of them. Property *ownership* brings distinct advantages over other, lesser property interests.[200]

Two people might inhabit identical houses. But if Ophelia owns her residence while Romeo merely rents his, their balance sheets will look very different, especially as time goes on. Although Ophelia's monthly mortgage payment might initially exceed Romeo's monthly rent, over time, Ophelia can pay down her mortgage, building equity in the house until she owns it outright. Unlike Romeo, she can also tap into that equity, using it to secure loans to purchase other assets. Thirty years later, Ophelia will own an appreciated asset that requires no mortgage payments while Romeo will hold no equity in his house despite paying increasing rents over the same period.

Or consider a common small business story. A sole proprietor starts a lawncare business. At first, his revenues will be measured solely by how many lawns he himself can mow. But if he later hires employees, he can profit from their labor, paying them in wages a subtotal of what he charges customers

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had separate property that they could use in protecting themselves and their families.").

198 Christopher Serkin, The Law of Property 12 (2d ed. 2016).

199 Laura Sullivan et al., The Racial Wealth Gap (2015), https://www.demos.org/sites/default/files/publications/RacialWealthGap_2.pdf [https://perma.cc/H3HE-RKD6].

200 For foundational treatments on the relationship between property ownership and wealth creation, see generally Thomas Piketty, Capital in the Twenty-First Century (2014) (showing that in developed countries, the rate of return on capital often exceeds the rate of economic growth); John Stuart Mill, Principles of Political Economy (London, John W. Parker 1848); Adam Smith, An Inquiry into the Nature and Causes of the Wealth of Nations 327–458 (London, W. Strahan & T. Cadell 1776).

and shifting his own time to managing his business. Eventually, if the business continues to grow, he can hire supervisors, accountants, and a general manager to perform every bit of business administration, freeing him to spend his time on the golf course while the company's dividends pile up in his bank account.

As these stories illustrate, ownership enables property holders to unlock the power of *capital*.[201] That is, owners can use certain title-held assets to generate additional value, whether by investing in appreciating securities, growing crops on one's own land, or generating rental income from an asset leased to others. Provided that such property-generated value is allowed to accumulate, the exponential effect of compounding returns can generate considerable wealth over the long term, including intergenerational wealth from the passing down of capital assets.

Marx and Engels fully appreciated the wealth-building power of privately held capital property, which is why they sought to abolish it.[202] In their view, the compounding nature of capital enabled the rich to get richer while the poor only got (relatively) poorer, giving rise to greater class disparities and, they predicted, systemic oppression.[203] And indeed, there can be little argument that differences in property ownership can exacerbate existing inequalities.[204] One need only look at the difference between Black and white home ownership in the United States to gain insight into why Black household wealth is now one tenth that of white households.[205]

Yet rather than remedy inequality by taking the wealth-building power of capital property away from everyone, as Marx and Engels would have it, a far more effective approach has been to help *more* people acquire that power. The superiority of

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201 *See* JAMES BONAR, ELEMENTS OF POLITICAL ECONOMY 45 (2d ed. 1904) (reciting the canonical definition of capital as "wealth that is used to produce more wealth").

202 *See* MARX & ENGELS, *supra* note 8. It should be noted that Marx and Engels did not call for the abolition of *all* private property, which might include one's clothes and personal effects. Rather, they called for the abolition of *productive* (that is, capital) property.

203 *Id.* at 79.

204 *See generally* JOSEPH E. STIGLITZ, THE PRICE OF INEQUALITY (2012) (chronicling the increasing divide between the wealthy and the poor in the United States).

205 *See* Rakesh Kochhar & Mohamad Moslimani, *Wealth Surged in the Pandemic, but Debt Endures for Poorer Black and Hispanic Families*, PEW RSCH. CTR. (Dec. 4, 2023), https://www.pewresearch.org/race-ethnicity/2023/12/04/wealth-surged-in-the-pandemic-but-debt-endures-for-poorer-black-and-hispanic-families/ [https://perma.cc/KJE7-25Z3]. *See generally* DOROTHY A. BROWN, THE WHITENESS OF WEALTH (2021).

the latter approach can be seen by comparing changes in aggregate social welfare between Communist and capitalist countries over the long term.[206] And it is why some argue that capitalism, founded on property ownership, has proved to be more effective than any other tool when it comes to reducing global poverty.[207]

We can also see how modern, progressive movements are now leveraging the wealth-generating potential of property to address racial inequality.[208] Many programs, both public and private, are actively working to increase Black household wealth by helping more Black families to become homeowners.[209] Not only, they believe, would homeownership enable Black families to build more wealth over the course of their lifetimes, but by having property that can be passed down to children and grandchildren, the compounding nature of capital property can create intergenerational effects that can serve to close the racial wealth gap over the long term.[210]

7. *Civilization*

> *Government is instituted to protect property of every sort; as well that which lies in the various rights of individuals . . . . This being the end of government, that alone is a just government which impartially secures to every man whatever is his own.*
>
> – James Madison[211]

Each of the above-described features of property can be considered an individual benefit in that it accrues primarily to

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206 *See* O. Lee Reed, *Nationbuilding 101: Reductionism in Property, Liberty, and Corporate Governance*, 36 VAND. J. TRANSNAT'L L. 673, 690–92 (2003).

207 *See* David Boaz, *Capitalism, Global Trade, and the Reduction in Poverty and Inequality*, CATO INST. BLOG (Apr. 14, 2016), https://www.cato.org/blog/capitalism-global-trade-reduction-poverty-inequality [https://perma.cc/S8BE-DNBD]; Branko Milanovic, *Global Income Inequality in Numbers: In History and Now*, 4 GLOB. POL'Y 198 (2013).

208 *See* Mehrsa Baradaran, *Closing the Racial Wealth Gap*, 95 N.Y.U. L. REV. ONLINE 57 (2020).

209 *See, e.g.*, *Black Homeownership Initiative*, CAL. HOUS. FIN. AGENCY, https://www.calhfa.ca.gov/community/buildingblackwealth.htm [https://perma.cc/444P-LMHH] (last visited Sept. 21, 2024); Izzy Woodruf, *Housing and Civil Rights Leaders Announce National Initiative to Increase Black Homeownership*, NAT'L FAIR HOUS. ALL. (June 18, 2021), https://nationalfairhousing.org/housing-and-civil-rights-leaders-announce-national-initiative-to-increase-black-homeownership/ [https://perma.cc/WE4P-FYDC].

210 *Id.* ("With homeownership a major driver of intergenerational household wealth and financial stability, the nation cannot achieve true racial and economic justice without addressing the barriers to Black homeownership . . . .").

211 James Madison, *Property*, 1 NAT'L GAZETTE 174, 174 (1792).

individuals. The final two property features I'll describe, starting with civilization, bring broader societal benefits.

Now, it might seem like stacking the deck to claim that property deserves credit for birthing civilization. But the claim does not originate with me. As Rousseau explained, in a "state of nature"—that is, pre-civilization—a person may obtain a right to something—that is, an object—in only two circumstances.[212] Either he is the first to possess the object, or he is strongest.[213] Yet even these two categories collapse upon further inspection. The first finder can exclusively possess a good only *until* a stronger second person takes it by force. Thus, exclusively possessing property in a pre-civilized setting ultimately depends on maintaining superior strength.

It is for this reason, Rousseau continued, that the right to exclusive possession "does not become a real right, until after the right of property is established."[214] That is, one's ability to hold an object against any other person who might want it can exist only by relying on the superior strength of the state.[215] Unless a capable authority is given the power and responsibility of protecting individual possession, private property cannot exist, and humanity is locked into a Hobbesian state of nature. In fact, by some accounts, the *primary* reason the state exists—and the reason it was originally created—is to protect property rights.[216]

In addition to the fact that property creates the basic conditions for civilization, the *maturity* of a civilization may be gauged, in part, by the maturity of its property system.[217] As Peruvian economist Hernando de Soto showed in his groundbreaking work, *The Mystery of Capital*, the fact that capitalism has not seen the same success in certain post-Communist countries as it has in the West can ultimately be explained

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212 JEAN-JACQUES ROUSSEAU, THE SOCIAL CONTRACT 20 (Charles Frankel ed., Hafner Publishing Co. 1947) (1762).

213 *Id.*

214 *Id.*

215 *Cf.* MAX WEBER, ESSAYS IN SOCIOLOGY 77–128 (H.H. Gerth & C. Wright Mills ed. & trans. 1946) (defining the state as an institution to which a community grants a legal monopoly on force).

216 *See* LOCKE, *supra* note 162, at 168 ("[G]overnment has no other end but the preservation of property . . . ."); THOMAS HOBBES, ON THE CITIZEN 63 (Richard Tuck & Michael Silverthorne ed. & trans., Cambridge Univ. Press 1998) (1642).

217 *See* Carol M. Rose, *Property as the Keystone Right?*, 71 NOTRE DAME L. REV. 329, 331 (1996) ("[W]hen ownership is insecure, we see something like the turmoil of recent Russia or indeed of any place undergoing social revolution.").

by differences in property *systems*.[218] The problem, de Soto contends, is not that residents of third-world countries do not work as hard as Americans or are not as entrepreneurial—often the contrary.[219] It is also not that third-world countries lack sufficient capital; it is, rather, that such capital is rendered *inaccessible* by immature property systems.[220]

Whereas Nancy the New Yorker might borrow against the equity in her house to start a business, Elias the Egyptian, who also owns his house, might have no such option. Nancy's lender can proceed with confidence because it can access public land records showing that Nancy holds free and clear title to her house. Elias cannot produce the same.[221] Although he might show that his family has lived in the house for five generations and might attest that no one has ever made a competing claim to the property, those facts might not be enough to persuade a would-be lender that its collateral would be secure.[222] Both domestic and foreign investment, therefore, suffer when a state cannot provide reliable information about precisely who owns what.[223]

The immaturity of a civilization may also be evidenced by extreme disparities in how much property its citizens own. For example, the feudal property systems of medieval Europe and Russia were "well-developed" in the sense that clear rules dictated who owned what. All land was ultimately held by the crown (the lord paramount), which devised large estates to mesne lords (infeudation), who in turn divided and sublet smaller tenures to vassals (subinfeudation), and so on, all the way down to freeholders (tenants paravail), the broadest and

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218 *See* Hernando de Soto, The Mystery of Capital 1–17 (2000).

219 *Id* (describing the entrepreneurial spirit of third-world residents).

220 *Id.*

221 *See* World Bank Group, *Assessment of Land Governance in Egypt* (Jan. 15, 2020) at 9, *available at* https://documents1.worldbank.org/curated/en/809671644219582056/pdf/Assessment-of-Land-Governance-in-Egypt.pdf (stating that "less than 10 percent of properties in [Egypt] can be said to be legally registered").

222 *See* Overseas Private Investment Corporation, *Egypt: Overview of the Housing Sector* (July 2025) at 4, *available at* https://www.govinfo.gov/content/pkg/GOVPUB-OP-PURL-LPS79334/pdf/GOVPUB-OP-PURL-LPS79334.pdf ("Because the residents do not have a formal title to their property, they cannot use their houses as collateral for other investments, such as building small businesses, limiting economic growth.").

223 de Soto, *supra* note 218, at 5–6.

poorest class of interest holders.[224] But those systems were far from just. Tenants could not sell or transfer their land without approval from their lords, a restraint on alienation that limited social mobility and even physical mobility.[225] The feudal system also ensured that the vast majority of capital income from the land accrued to the mesne lords and to the crown rather than to the masses who resided and worked on the land.[226]

Even after feudalism's demise, severe wealth inequality has continued to serve as a metric for the health of a society. The absence of a middle class, coupled with the chasm between a propertied aristocracy and an unpropertied peasantry, proved a central catalyst in the bloody French Revolution of the eighteenth century.[227] And even the United States, which has usually boasted a strong a middle class, has seen its fair share of social upheavals during periods in which industrialization produced extreme disparities in property ownership.[228]

8. *Improving Social Welfare*

> *Freedom in a commons brings ruin to all.*
> – Garrett Hardin[229]

Private property also helps to improve social welfare within existing civilizations. For one thing, it plays an important role in forcing actors to internalize the costs of their actions. As Harold Demsetz explained, "property rights develop to internalize externalities when the gains of internalization become larger than the cost of internalization."[230] Garrett Hardin provided perhaps the most famous illustration of this principle by

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224 Thomas M.S. Hemnes, *Restraints on Alienation, Equitable Servitudes, and the Feudal Nature of Computer Software Licensing*, 71 DENV. U. L. REV. 577, 581–82 (1994).

225 Van Rensselaer v. Hays, 19 N.Y. 68, 72 (1859) ("In the early vigor of the feudal system, a tenant in fee could not alienate the feud without the consent of his immediate superior . . . .").

226 1 RICHARD BARRAS, A WEALTH OF BUILDINGS: MARKING THE RHYTHM OF ENGLISH HISTORY 42–46 (2016).

227 *See* WILLIAM DOYLE, THE FRENCH REVOLUTION: A VERY SHORT INTRODUCTION 26–27 (2d ed. 2019).

228 *See, e.g.*, *The Gilded Age*, PBS, https://www.pbs.org/wgbh/americanexperience/features/carnegie-gilded/ [https://perma.cc/JPV2-LCQR] (last visited Feb. 2, 2025) (describing the social consequences of severe inequality during the Gilded Age).

229 Garrett Hardin, *The Tragedy of the Commons*, 162 SCIENCE 1243, 1244 (1968).

230 Harold Demsetz, *Toward a Theory of Property Rights*, 57 AM. ECON. REV. 347, 350 (1967).

describing the "tragedy of the commons," such as in the case of an open field.[231] If every shepherd is free to graze without restriction, the land will eventually be rendered barren, making it useless to everyone.[232] Each shepherd might intuitively understand that he will benefit more in the long term by grazing only a sustainable amount, provided that all shepherds behave similarly. But without assurance that no other shepherd will take more than his fair share, each shepherd is individually incentivized to graze as much as possible right now lest he get nothing later.

Creating property rights can prevent this tragedy by forcing each shepherd to internalize the costs of his actions.[233] For example, the state could divide the field into ten equal lots, one for each shepherd, and protect their exclusive rights by prohibiting trespass. Thereafter, if a shepherd over-grazes his lot, depleting it of fertility, he alone will suffer the consequences of his actions. Conversely, he will be incentivized to care for and improve his lot, knowing that he stands to gain the full benefit of those improvements. Private property thus causes him to internalize both the negative and the positive externalities of his actions. The net result is that owners are more likely to tend to the sustainability of their property, an incentive that, at least partially, addresses the environmental critique of property.

The same incentive structure applies to chattels. Missing from Auken's idyllic account of high-quality, shared kitchen equipment is the problem of externalities. An individual who prematurely wears down a shared blender by using it incorrectly will not bear the full cost of her carelessness. That cost will be spread among all who use the machine and collectively pay for its repairs or replacement. Because others will likewise have less incentive to care for community blenders than they would if they had to bear the full cost of replacing their own privately held machines, the aggregate effect will be widespread neglect for shared resources. We already see this phenomenon at play in the abused city scooters that lie in ditches,[234]

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231 *See* Hardin, *supra* note 229, at 1244.

232 *Id.*

233 Demsetz, *supra* note 230, at 354–56.

234 *See* Vivian Ho, *Stolen, Burned, Tossed in the Lake: E-Scooters Face Vandals' Wrath*, THE GUARDIAN (Dec. 28, 2018), https://www.theguardian.com/us-news/2018/dec/28/scooters-california-oakland-los-angeles-bird-lime [https://perma.cc/62LJ-S939].

horror stories of trashed Airbnb rentals,[235] and the high rate of crashes involving rented vehicles.[236] It's all well and good that others use Auken's living room for business meetings when she's not home, but how much incentive do they really have to clean up after themselves?

* * *

I'll make two points in closing. First, this Part is not intended as a hagiography of property. Property offers benefits, not silver bullets. There are many problems that property alone cannot solve and some problems that it introduces. The compounding effects of capital can lead to severe inequality.[237] Pollution that crosses property lines can force neighbors to bear the cost of externalities. Situations in which too many individuals hold property rights in the same resource can create "tragedies of the anti-commons."[238] And absolute property rights can enable invidious discrimination.

Tools other than property, such as regulation, government-sponsored benefits, and community trust, are essential for creating a modern, well-ordered society. But these tools should be regarded as *supplements* to property rights, not substitutes. Property forms the foundation on which these additional systems rest, and it would be difficult, if not impossible, to combine them to build an alternative foundation.

Second, if any single theme has emerged from the above discussion, I hope it's this: property is inherently *progressive*. Because the political right tends to favor stronger property rights than does the political left, it's easy to assume that property is a conservative, or even regressive, concept. That assumption can certainly be true up to point. After all, it was, in part, an unduly conservative commitment to property rights that

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235 *See* Rhiannon Lewin, *Airbnb Host Shares Shocking Damage to Home After 'Sick' Guests Trash Unit*, 7NEWS (Apr. 8, 2023), https://7news.com.au/news/world/airbnb-host-shares-shocking-damage-to-home-after-sick-guests-trash-unit-c-10193765 [https://perma.cc/EHC5-XVUU].

236 *See* Richard Tay & Jaisung Choi, *Differences in Rental and Nonrental Car Crashes*, J. ADVANCED TRANSP. (July 4, 2017), https://www.proquest.com/docview/2407638444/fulltextPDF/8B4322CBEE2B4EF9PQ/1?accountid=48550&sourcetype=Scholarly%20Journals [https://perma.cc/4BHM-TRUA].

237 *See* PIKETTY, *supra* note 200, at 30–35 (arguing that the rate of return on capital tends to be higher than the rate of economic growth such that wealth tends to concentrate in the hands of the already wealthy, creating ever-widening inequality).

238 *See* Hunter, *supra* note 33, at 509–13 (cautioning against the danger of a digital anticommons); Heller, *supra* note 76; *see also* ELINOR OSTROM, GOVERNING THE COMMONS 13–15 (1990) (offering examples of successful commons in the physical space).

caused the Supreme Court to strike down progressive social welfare legislation during the *Lochner* era. And both socialism (weakening property rights) and Communism (abolishing them) have historically been regarded as leftist or progressive ideologies.

But as described above, property was essential to moving humanity out of a Hobbesian state of nature into civilization. Property rights also advance personhood, liberty, free speech, privacy, and political participation. They help to protect the environment by disciplining environmentally destructive behavior. And they enable the kind of wealth building that can lift countries out of poverty and remedy racial inequality through intergenerational transfers. In sum, at least within a large portion of the continuum between no property and absolute property rights, property is profoundly progressive.

In the next Part, I'll examine whether society's migration to an unpropertied internet threatens to reverse some of the progress that property has brought it.

IV
The Risk of a Regressive Internet

As explained in Part III, property is a progressive device in the sense that it enables civilization, improves social welfare, and provides the foundation on which many individual rights rest. By contrast, weakening or eliminating property can erode these important benefits, thereby moving society in a regressive direction. That fact seems obvious enough in real space if we imagine returning to slavery, coverture, or feudalism or permitting the strongest to take whatever they like by force. But if cyberspace is unpropertied, as I argued in Part II, and if society is increasingly moving online, then does this development portend a return to certain regressive conditions?

In this Part, I attempt to answer that question. I start by describing the ways in which society has moved online. I then analyze the degree to which the problems that attend unpropertied or under-propertied societies might present themselves within a society that lives online. I close by addressing the skeptic's case against my arguments.

A. Society Moves Online

For the last thirty years, society has been steadily moving online. That's hardly a novel claim. But the sheer magnitude of this migration might not be fully appreciated. So, I'll offer a

couple lenses (which are also not novel) that may help to bring this transformation into focus.

1. *Essentiality*

In the first place, the internet has become essential to daily life. Nearly every aspect of our lives now has an online component, from education and fitness, to romance and health care, to how we interact with local, state, and federal officials. In many cases, online resources have all but supplanted their offline predecessors, such that one cannot meaningfully participate in certain activities or endeavors without access to online services. It is for this reason that many internet-enabled offerings were deemed "essential services" during COVID-19 lockdowns.

One way to become convinced of these assertions is to observe what happens when people are excluded from online services or from the internet altogether. In a 2023 report on "Digital Exclusion," the Communications and Digital Committee of the UK House of Lords raised the alarm on more than "1.7 million UK households [that] have no mobile or broadband internet."[239] Noting that that "[e]verything from housing and healthcare resources to banking and benefit systems is shifting online at an unprecedented rate," the committee concluded that "allowing millions of citizens to fall behind" has "profound consequences for individual wellbeing and . . . for UK productivity, economic growth, public health, . . . [and] education."[240]

Such disparities disparately impact elderly and poor people. But they can also affect other marginalized groups. For example, those who have served long prison sentences, especially those who began their incarceration in the pre-internet era, struggle greatly to re-enter society. As advocates have observed, "Many of the social services and job programs that former prisoners rely on to successfully re-enter their communities are inaccessible without a comprehensive knowledge of the internet."[241] These differences can be seen at the macro scale when examining the plight of developing nations that struggle to take advantage of modern, life-saving resources

239 COMMUNICATIONS AND DIGITAL COMMITTEE, DIGITAL EXCLUSION, 2022-3, HL 219, at 3 (UK), https://publications.parliament.uk/pa/ld5803/ldselect/ldcomm/219/219.pdf [https://perma.cc/598T-CMME].

240 *Id.*

241 Marquez, *supra* note 19.

because they lack the network infrastructure on which those resources depend.

In at least one area of law, courts have attempted to address the effects of the "digital divide" on disadvantaged groups. The Americans with Disabilities Act prohibits discrimination based on disability in "place[s] of public accommodation."[242] Although the ADA was passed in 1990—years before the first commercial internet browser was even available—courts have adopted a very cyber-friendly interpretation of the term "places of public accommodation." Recognizing that "business is increasingly conducted online" and that permitting online businesses to disregard individuals with disabilities would prevent such individuals from "fully enjoy[ing] the goods, services, privileges and advantages available indiscriminately to other members of the general public,"[243] several courts of have held that the ADA applies to websites.[244]

2. *Immersion*

But society's relationship with cyberspace goes deeper than essentiality. Plenty of other kinds of services have become central to modern life, including electricity, health care, waste disposal, and telephones, all of which were likewise declared "essential services" during COVID-19 lockdowns.[245] What distinguishes online services from their offline counterparts when it comes to searching for property rights?

The answer, I think, is that cyberspace is experiential. When a user interacts with cyber-resources, she does so from the standpoint of being "in" cyberspace. Within that environment, she assumes an identity, she acquires and deploys resources, and she moves between distinct areas, each with their own experiential boundaries. The internet is participatory in ways that other essential services are not.[246]

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242 *See* 42 U.S.C. § 12182(a).

243 Nat'l Ass'n of the Deaf v. Netflix, Inc., 869 F. Supp. 2d 196, 200 (D. Mass. 2012).

244 *See, e.g.*, *id.*; Robles v. Domino's Pizza, LLC, 913 F.3d 898 (9th Cir. 2019); Del-Orden v. Bonobos, Inc., No. 17 Civ. 2744, 2017 WL 6547902 (S.D.N.Y. Dec. 20, 2017).

245 *See* Caitlyn Shelton, *LIST: Essential Jobs in Tennessee During the COVID-19 Pandemic*, Fox 17 (Jan. 16, 2024), https://fox17.com/archive/list-essential-jobs-in-tennessee-during-the-covid-19-pandemic [https://perma.cc/5TVZ-QUE7].

246 *See* Ross Douthat, *A Political Theory of King Elon Musk*, N.Y. Times (Dec. 10, 2022), https://www.nytimes.com/2022/12/10/opinion/elon-musk.html [https://perma.cc/E4X2-RATC] ("[T]here's a sense in which Twitter is a new kind of polity, a place people don't just visit but inhabit.").

The question of how seriously we should take the "cyberspace as a place" metaphor received plenty of attention during the early cyberproperty debate, and in this regard, the Open Access scholars made two valid points. First, as a matter of phenomenology, scholars like Mark Lemley explained that cyberspace was in fact quite *unlike* physical space.[247] For example, although one can occupy only one space at a time in the physical world, one can exist in multiple places in cyberspace.[248] "Physical stores have spatial constraints that limit the number of customers who can enter," but an online store can be expanded infinitely by simply adding more servers.[249] And unlike real space, which must arrange items in relative physical proximity to each other (a sidewalk abutting a building, a house next door, etc.), such adjacency is absent from cyberspace.[250] One can "move" from a website hosted in Cincinnati (to the extent the hosting location even matters) to a game running in Tokyo in a single, one-second leap.

Second, even if thinking about cyberspace as a place is useful for everyday conversation or as a technological abstraction, that doesn't mean the metaphor should have any legal significance. For example, under the common law, one can enjoin another from trespassing onto his land, no matter how minor the interference. But trespass to chattels claims require a plaintiff to show that the interference materially harmed his chattel or dispossessed him of it. That distinction proved decisive in the *Intel* decision as well as subsequent cases that dismissed trespass claims for harmless volumes of emails or website crawling. As Dan Hunter argued, conceptualizing email services or websites as "places" should not thereby convert them from chattels into real property for purposes of trespass law.[251]

Yet technological developments have chipped away at the phenomenological criticism over the past twenty years. Consider that when Lemley chronicled the many differences between cyberspace and real space in 2003, 62.8% of households

247 Lemley, *supra* note 33, at 523–26.

248 *Id.* at 526.

249 *Id.*

250 *Id.*

251 Hunter, *supra* note 33, at 483–88. *But see* Epstein, *supra* note 53 (arguing that websites should be treated like real property due not to their metaphorical spatiality but to their immovable nature).

still accessed the internet through a dial-up phone connection.[252] Even those lucky enough to have "broadband" connections at their disposal could use them only to access an internet that was downright primitive by today's standards.[253] With only parsimonious transmission speeds and basic internet browsers and websites available, internet users logged onto a mostly read-only internet with static content. As Lemley himself described the object of his 2003 comparison, "It is a medium that transmits mostly text, images, and (more recently) sounds, just as television does."[254] Given how slow and underfeatured the early internet was, it's no wonder that the Open Access scholars regarded the "cyberspace as a place" metaphor as more fanciful than descriptive.

But how vast is the gap between cyberspace and real space today? Take just a handful of technological developments over the intervening twenty-plus years (to say nothing of their sociological implications). Advances in browser and website technology transformed the internet from a read-only to a read-write medium in which average users could participate by posting their own content to wikis, blogs, and later social media, a development commonly referred to as Web 2.0 (and an arrival typically pegged to 2004). A more than million-fold increase in transmission speeds made it possible to stream all manner of media, from audio to video to real-time interpersonal interaction. The advent of smart phones in 2007 enabled us to carry the internet with us wherever we go, relegating notions of logging into or out of cyberspace to the past.

Since 2003, as more of the physical world has moved into cyberspace, cyberspace has moved into the physical world. Often referred to as the "Internet of Things" or "IoT," more and more traditional, physical items are becoming connected to the

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252 U.S. Dep't of Com., A Nation Online: Entering the Broadband Age 13 (2004), https://www.ntia.gov/files/ntia/editor_uploads/NationOnlineBroadband04_files/NationOnlineBroadband04.pdf [https://perma.cc/P7DQ-4K5G].

253 I place the term "broadband" in quotes because such high-speed connections were positively torpid compared to even pedestrian connections today. *Compare Top 10 Fastest Broadband ISPs for December 2003*, Thinkbroadband (Jan. 9, 2004), https://www.thinkbroadband.com/news/1490-top-10-fastest-broadband-isps-for-december-2003 [https://perma.cc/5LK6-LMXR] (ranking Eclipse Internet as the fastest ISP in December 2003 for offering 450.9 Kbps download speeds), *with* Lisa Iscrupe & Hannah Whatley, *Comparing the Top High-Speed Internet Providers of 2024*, USA Today (Aug. 23, 2024), https://www.usatoday.com/tech/internet/high-speed-internet/ [https://perma.cc/LYV9-QL9S] (listing 8,000 Mpbs subscriptions, a 1,774,129% increase).

254 Lemley, *supra* note 33, at 525.

internet.[255] From wearables like glasses and watches to connected cars and smart cities to cyber-fridges, an increasing percentage of previously lifeless objects are bringing the internet with them. The result is that it is becoming ever harder to stay out of cyberspace, even if you never touch a computer. And advances in wireless transmission technologies, including 5G connectivity and low-earth orbit satellite internet constellations are reducing internet dead zones to a negligible portion of the earth's surface. As Eric Goldman put it, "As the Internet increasingly pervades physical items in the 'offline' world, what isn't 'the Internet'?"[256]

Today, billions of dollars are funding the development of sophisticated virtual reality technologies—most notably, the "metaverse"—that aim to incorporate more human senses and make cyberspace increasingly indistinguishable from real space. Modern VR goggles provide 360-degree views of virtual venues,[257] and tactile feedback devices, including full-body suits, use air pressure, vibration, and electrical stimulation to bring haptics to the online experience.[258] Such developments enable users to touch, hug, sexually stimulate, or even hit other users.[259] Dynamic, omnidirectional treadmills permit users to walk or even run in the metaverse while remaining stationary in the physical world.[260] It should therefore come as no surprise that the adjective often used to describe the modern, VR-powered internet is "immersive."

In 1993, Julian Dibbell published his famous account of a "rape in cyberspace," which brought the issue of cyber-harms

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255 *See What is IoT?*, ORACLE, https://www.oracle.com/internet-of-things/what-is-iot/ [https://perma.cc/7XYE-X5YD] (last visited Dec. 3, 2024).

256 ERIC GOLDMAN, INTERNET LAW: CASES & MATERIALS 2 (2024 ed.).

257 *See* Stefan Arisona, Taisha Fabricius & Avonlea Fotheringham, *360 VR: Create and View 360 VR Experiences on the Web*, ARCGIS BLOG (June 23, 2022), https://www.esri.com/arcgis-blog/products/city-engine/3d-gis/arcgis-360-vr/ [https://perma.cc/FVB3-8R5B].

258 *See* James Purtill, *'Haptic Feedback' Virtual Reality Teslasuit can Simulate Everything from a Bullet to a Hug*, ABC NEWS (Mar. 31, 2021), https://www.abc.net.au/news/science/2021-04-01/vr-teslasuit-simulates-virtual-reality-touch-haptic-feedback/100030320 [https://perma.cc/58VU-LCMA]; Katherine Singh, *Sex In The Metaverse Is Coming – And So Can You*, REFINERY29 (Aug. 10, 2022), https://www.refinery29.com/en-us/2022/08/11063604/sex-in-metaverse-how-to [https://perma.cc/U8XC-8DJQ].

259 Purtill, *supra* note 258; Singh, *supra* note 258.

260 *See* Charlie Fink, *A Decade of Innovation: Virtuix Levels Up VR with Omni One*, FORBES (Aug. 27, 2024), https://www.forbes.com/sites/charliefink/2024/08/27/a-decade-of-innovation-virtuix-levels-up-vr-with-omni-one/ [https://perma.cc/WQ66-WSKW].

into the public consciousness.[261] Yet, the virtual environment in which the events transpired provided only a text-based interface, and the "rape" occurred when a malicious user leveraged a subprogram that allowed him merely to *describe* actions that were falsely attributed to other characters.[262] Thirty years later and powered by the metaverse, virtual attacks are crossing over into the audio, visual, and tactile space, as accounts of "gang rapes" and sexual assaults against minors are being reported.[263] Nor can it be assumed that such occurrences will affect only a niche cross-section of the extremely online. According to one study, the next generation of children will spend approximately ten years in virtual reality over the course of their lifetimes.[264]

Even courts are recognizing that the barriers between the physical world and the virtual world are breaking down. As noted above, several federal courts have held that websites may constitute "places of public accommodation" for purposes of the American with Disabilities Act.[265] In addition, in *South Dakota v. Wayfair, Inc.*, the Supreme Court overruled its earlier decision that prevented states from requiring out-of-state retailers to collect and remit taxes on sales to residents.[266] Acknowledging "the continuous and pervasive virtual presence of retailers today,"[267] the *Wayfair* Court dismissed the physical presence rule as more appropriate to the nineteenth century than the twenty-first.[268] One federal district court, taking its cue from *Wayfair* in adjudicating a discrimination claim against a website, stated, "Given the massive restructuring of both the economy and public association effectuated by the rise of online platforms and business . . . , drawing an inflexible

261 Julian Dibbell, *A Rape in Cyberspace*, VILLAGE VOICE, Dec. 21, 1993, at 36.

262 *Id.*

263 *See* Adam Smith, *Rape in Virtual Reality: How to Police the Metaverse*, CONTEXT (Jan. 24, 2024), https://www.context.news/digital-rights/sex-assault-claims-and-crime-raise-fears-of-new-virtual-wild-west [https://perma.cc/3567-HPEN].

264 *Children Likely to Spend 10 Years of Their Lives in VR Metaverse, Study Suggests*, ENG'G & TECH. (Oct. 9, 2023), https://eandt.theiet.org/2022/04/20/children-likely-spend-10-years-their-lives-vr-metaverse-study-suggests [https://perma.cc/5SZN-LARU].

265 *See supra* note 244 and accompanying text.

266 138 S. Ct. 2080, 2091–96 (2018) (overruling Quill Corp. v. North Dakota, 504 U.S. 298 (1992)).

267 *Id.* at 2095.

268 *Id.* at 2092.

distinction between physical facilities . . . and virtual services and platforms . . . appears increasingly tenuous."[269]

In any event, I based my legal arguments in Part II on property theory, not spatial metaphors. Here, I have described the increasingly spatial nature of cyberspace simply to emphasize the economic and sociological dimensions of cyberspace that counsel for strengthening property rights in it, not to try to map it onto existing positive law, as the Open Access scholars rightly critiqued.

B. Return of the Unpropertied Society

If cyberspace is indeed unpropertied, as I argued in Part II, and if society is continuing to migrate into cyberspace, as I attempted to demonstrate above, then society itself is at risk of becoming increasingly unpropertied. And if the loss or weakening of property rights can have deleterious effects on a society, as I chronicled in Part III, then it behooves us to examine whether the modern, internet-fueled move away from private property might cause similar harms. Put differently, we tend to assume that adopting ever more capable online services represents progress. But by discarding traditional property-based systems along the way, are we, however unwittingly, *regressing* as a society?

I'll now attempt to answer that question, using the property benefits described in Part III as a rubric. In particular, I'll examine the degree to which a malady that previously presented itself in an unpropertied physical society is apt to re-present itself in an unpropertied online society.

But first, I should get ahead of a question that may pop into the reader's mind as I examine the consequences of weak property rights in cyberspace. In Part I, I explained that courts have both recognized cyber-resources as property and have afforded them some of the same horizontal rights of exclusion as other forms of property. It is mostly one's vertical property rights—lack of title, inability to prevent a provider from exercising continuous control, etc.—that characterize cyberproperty. If that's the case, then shouldn't the analysis be confined to the harms associated with ownership (or lack thereof)? Why analyze the consequences of weak horizontal rights if courts already allow resource-holders to exclude others from their cyberproperty?

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269 Wilson v. Twitter, No. 20-cv-00054, 2020 U.S. Dist. LEXIS 110800, at *27 (S.D. W. Va. May 1, 2020).

Two reasons. First, as noted, cyberproperty's powers of exclusion are unreliable. Under *Intel* and its progeny, one must show that a defendant's interference materially damaged a resource to make out a claim for trespass to chattels, and not all courts permit plaintiffs to bring conversion claims even when cyberproperty is stolen. The damage requirement and merger doctrine, thus, remove a significant slice of the horizontal pie that would otherwise be enjoyed by some cyberproperty holders. Second, a provider's vertical control may extend to horizontal matters. For example, in its terms of service, a provider might require a user not only to disclaim any ownership in cyber-resources she acquires but also to agree not to exclude other users from her resources or not to bring suit in the event of a dispute with any other user.[270] The vertical often entails the power to define the horizontal.

1. *Personhood*

Given that personhood is the most fundamental property right an individual can possess, it's worth assessing the impact of an internet that doesn't recognize any inherent right to self-ownership.

In an online society, one's status as a person is often synonymous with the status of her online accounts. That status may be quantified by reputation points, number of followers or connections, or simply flags in a provider's algorithm. Yet, as discussed, users do not own their online accounts or digital identities. Service providers often reserve the right to revoke them for any reason or no reason.[271] And the loss of a user's account from major platforms is often enough to remove her from online society. Consider a 2021 study that evaluated the effect on three public figures whose Twitter accounts were revoked.[272] Following the revocations, not only was their speech

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270 Such terms might make a lot of sense in some contexts, such as online games in which stealing, "griefing," or interfering is supposed to be part of the user experience.

271 *See, e.g.*, *Terms of Use*, INSTAGRAM, https://help.instagram.com/termsofuse [https://perma.cc/ABG3-QBQB] (last visited Sept. 23, 2024); *Account Usernames and Display Names*, TWITCH, https://safety.twitch.tv/s/article/Usernames?language=en_US [https://perma.cc/X2GQ-BHFF] (last visited Sept. 23, 2024); *User Agreement*, REDDIT § 17 (Sept. 25, 2023), https://www.redditinc.com/policies/user-agreement-september-25-2023 [https://perma.cc/T6C5-YHK2].

272 *See* Shagun Jhaver, Christian Boylston, Diyi Yang & Amy Bruckman, *Evaluating the Effectiveness of Deplatforming as a Moderation Strategy on Twitter*, 5 PROC. ACM HUM.-COMPUT. INTERACTION 381:1 (2021).

on the platform reduced by 100% (obviously), but other users' speech *about* those figures declined by as much as 97%.[273]

Of course, users who lose their accounts on the major internet platforms are not necessarily booted from the internet itself. But they are effectively removed from online *society*. They can continue to use other online services, including services in which they maintain accounts, for shopping, reading news, and the like. But without the ability to interact with others through these more basic platforms or to maintain public identities through within those services, they are reduced to being online *users* rather than online persons.

Recall that a critical component of personhood is the right to keep property that is deeply personal to the subject. Yet, without any right to digital chattels, a user can be deprived of any online item, no matter how meaningful the user's attachment to it. And the fact that a platform can hand a user's digital items and even her alias to another user (or to itself) might also be regarded as an injury to personhood. It would indeed be chilling in the physical realm if the law permitted Sam (or Sam's Club) not only to take over Jane's house and personal effects but also to assume her name.

The law also has little regard for people's online bodies, such as they are. Avatars can be battered, murdered, or even raped, seemingly without legal penalty, no matter how realistic the violation or how similar the avatar might be to the user's real-world likeness.[274] One bright spot in an otherwise dark corner of the internet is that legislatures are beginning to address the epidemic of deepfake porn, in which a person's face may be superimposed onto an existing pornographic video of someone else.[275] But as Mark Lemley and Eugene Volokh hypothesize, VR applications might even enable users to decide for themselves how others should appear to them, from innocuous changes in hair color to making other users nude.[276]

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273 *Id.* at 381:14.

274 *See* Naomi Nix, *Attacks in the Metaverse are Booming. Police are Starting to Pay Attention*, WASH. POST (Feb. 6, 2012), https://www.washingtonpost.com/technology/2024/02/04/metaverse-sexual-assault-prosecution/ [https://perma.cc/BD4F-RNKB] (explaining why it may be difficult to prosecute sexual assaults in the metaverse under existing laws).

275 *See* Emmanuelle Saliba, *Bill Would Criminalize 'Extremely Harmful' Online 'Deepfakes*,*'* ABC NEWS (Sept. 25, 2023), https://abcnews.go.com/Politics/bill-criminalize-extremely-harmful-online-deepfakes/story?id=103286802 [https://perma.cc/DHK4-ANRV].

276 *See* Mark A. Lemley & Eugene Volokh, *Law, Virtual Reality, and Augmented Reality*, 166 U. PA. L. REV. 1051, 1078–79 (2018).

Losing the ability to decide for oneself how she appears to the physical world would surely detract from her personhood. The injury seems comparable even if it happens in cyberspace.

2. *Liberty*

As noted, in the offline world, property ownership generally provides freedom—freedom to do as you please on your land and freedom to use, alienate, or dispose of your chattels however you like. But because users cannot own cyberproperty, they cannot enjoy a comparable degree of liberty online.

Website operators, app developers, and even domain name intermediaries can dictate, how, when, and where you may use your digital resources in their terms of service. Such providers also routinely restrict the degree to which users may sell or transfer their digital chattels to others. For example, Upwork, a website that connects freelancers to potential clients, offers a system of tokens called "connects" to regulate user privileges.[277] Freelancers may use connects to bid on jobs, to promote their profiles, or to indicate their availability.[278] Users on dating sites like Tinder and Bumble may likewise deploy "boosts"[279] or "Bumble coins,"[280] respectively, to amplify their personal ads over those of other users. And Fortnite users can purchase "V-Bucks" as a virtual currency to obtain in-game resources from the provider.[281]

Yet each of these providers prohibits or otherwise makes it impossible to transfer such resources to others. Even IP addresses, a crucial component to participating in cyberspace, were once the subject of strict limits on sale or reassignment. No matter whether you purchase your cyberproperty with a credit card or earn them as sweat equity, providers may strictly curtail your rights of use and alienation.

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277 *See Understanding and Using Connects*, Upwork, https://support.upwork.com/hc/en-us/articles/211062898-Understanding-and-Using-Connects [https://perma.cc/JR79-ZS7B] (last visited Dec. 3, 2024).

278 *Id.*

279 *Boost*,Tinder, https://www.help.tinder.com/hc/en-us/articles/115004506186-Boost [https://perma.cc/NKW9-VXCD] (last visited Nov. 20, 2024).

280 Ashley Carman, *Bumble Now Lets Users Pay to Bring Their Profile to the Top of the Match Stack*, The Verge (Feb. 11, 2019), https://www.theverge.com/2019/2/11/18220073/bumble-spotlight-feature-coins-launch [https://perma.cc/36DD-QJR2].

281 *See V-Bucks Card FAQs*, Fortnite, https://www.fortnite.com/vbuckscard [https://perma.cc/CZM4-5ZSZ] (last visited Oct. 14, 2024).

As explained above, such limitations are made possible by the vertical control providers retain over users' cyberproperty. Because cyber-resources are leased or licensed, rather than owned, providers maintain a superior property interest in those resources. And, leveraging the tools so effective in governing other forms of New Property, providers often bolster that control with IP restrictions, contract terms, and code that can detect, report, and enforce violations of nearly any rule a provider might lay down.

An online society is fundamentally a *permissioned* society. For every activity in which a citizen hopes to engage online, that citizen must seek the permission of another party. Such a control structure marks a dramatic departure from the liberties citizens enjoy in the offline world, where property rights give them a much-needed measure of autonomy from the dictates of others.

3. *Privacy*

That internet users lose out on privacy should be the least controversial claim in this piece. Your internet service provider generally can see and log every website you visit.[282] By utilizing cookies and client-side scripting, a savvy website operator can observe which of its webpages you view, where you scroll, and how long you spend looking at any particular item. It is this fine-tuned surveillance that social media companies use to serve content that will keep you maximally engaged on their platforms for advertising revenue. Such monitoring is made possible by the shift from property to services.

To be sure, some providers pride themselves on protecting user privacy. The Signal messaging app, for instance, offers end-to-end encryption that shields user data not only from others but from the company's own view.[283] And Amazon Web Services designed its Nitro hypervisor to make it technically impossible to peer into customers' cloud-hosted virtual machines.[284] But, importantly, when privacy protections like

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282 Danka Delić, *Can Your Internet Provider See Your Browsing History*, PROPRIVACY (Apr. 15, 2024), https://proprivacy.com/guides/can-your-isp-see-your-browsing-history-ways-to-protect-your-online-privacy [https://perma.cc/HDQ3-BSBP].

283 *How Do I Know My cCommunication Is Private?*, SIGNAL, https://support.signal.org/hc/en-us/articles/360007318911-How-do-I-know-my-communication-is-private [https://perma.cc/KV9T-UYX5] (last visited Sept. 22, 2024).

284 David Brown, *Confidential Computing: An AWS Perspective*, AWS: SECURITY BLOG (Aug. 24, 2021), https://aws.amazon.com/blogs/security/confidential-computing-an-aws-perspective/ [https://perma.cc/5V5Y-7B2V].

these exist, it is because *providers* have decided to offer them. Unlike the privacy that naturally inheres in title-held property, privacy in service entitlements is yet another benefit that is permissioned by other parties.

It should also come as no surprise that internet users enjoy fewer privacy protections against the state. In the physical world, mere possession of property—for example, a rental car for which one is not even an authorized driver—can provide the possessor with a reasonable expectation of privacy sufficient to require law enforcement to obtain a warrant to search it.[285] But such protections are far weaker when it comes to cyberproperty. Under the Stored Communications Act, the state can often compel a provider to crack open a customer's account or other cyber-resource in order to peer inside by simple subpoena.[286]

4. *Expression*

It seems obvious enough that you can't just say whatever you want on Snapchat, YouTube, or the comments section of the Washington Post website. But the loss of free expression on the service-oriented internet runs deeper than that.

As explained, the internet lacks traditional public property, such as streets, parks, and sidewalks, on which people could otherwise speak freely. Users must therefore spend all their online time in "private" cyberplaces, where providers can set the terms of permissible discourse.[287] Users who complain about such "private censorship" are often met with a seemingly reasonable response: "Don't like it? Then go build your own website."

That rejoinder is tantamount to telling a user to take advantage of the expressive benefits that flow from private property.[288] And in the offline world, it would be sage wisdom, like telling a frustrated pundit that whatever power the Washington Post might have over its website, it can't stop her from speaking her mind in her own apartment.

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285 *See* Byrd v. United States, 138 S. Ct. 1518, 1531 (2018).

286 *See* 18 U.S.C. § 2703 (permitting the state to obtain a customer's communications by simple subpoena from an electronic communication service provider after 180 days of storage or from a remote computing service provider at any time).

287 "Private" in the sense of under private control, not private property as this Article has defined it.

288 *See supra* section II.B.4.

But as we've discovered, private property is lacking in the online world. That much is clear for digital identity assets like accounts and aliases and for digital chattels like tokens and entitlements. But it's also true for digital realty—the websites and other applications that not only house digital identity and digital chattels but that make them possible in the first place. Even one's digital realty can be revoked under terms set by providers. No person or business has a fundamental right to an IP address, a domain name, packet carriage, or other core infrastructural services, and thus no website or application ultimately has the legal right to exist. This fact, perhaps more than any other, highlights the unpropertied nature of the internet.

If no publishing house will have anything to do with a controversial author in the physical world, she can use her own printer to self-publish. If the Democratic Socialists of America can't find anyone willing to rent space to them, they can buy their own building and hold as many conventions as they like. If they lack the funds to do that, the First Amendment guarantees them expressive access to public parks and sidewalks.

The impossibility of ownership in cyberspace removes these options. Not only can a user have no guarantee that she will be able to express herself in anyone else's online space, but she cannot assume that she can always fall back on her own. Nor, because cyberspace lacks public places, can she simply abscond to the digital equivalent of the nearest park or sidewalk as a last resort. Without private property, she can have no guarantee she will be permitted to speak publicly on the internet.

5. *Protection from Marginalization*

Piggybacking on the last point, the absence of digital realty also has negative implications when it comes to one's ability to participate in society. As explained above,[289] property, both real and personal, serves as a bulwark against marginalization. The heretic whose viewpoints no publisher will touch can buy his own printing press and start churning out his missives. The persecuted ethnic, religious, or political group can, if it comes to that, build a new community on its own land. And it is because the homeless lack even these basic options that they often enjoy *no* place in society.[290]

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289 *See supra* section II.B.5.

290 *See* Waldron, *supra* note 183, at 48.

But because digital realty is an illusion—no website or online community has any legal right to exist—property's critical protection for the marginalized was discarded along society's journey from real space to cyberspace. No amount of real-world property (including money) can protect a person or group from viewpoint foreclosure if the rest of online society is determined to see the back of them. Without their own property to retreat to, their only option is to leave the internet.[291]

6. *Wealth*

Because most wealth continues to be measured by offline resources (cash, stock, real property, etc.), society's move to cyberspace poses less of an immediate threat to the wealth-building benefits of private property. And although the most valuable online resources—domain names and IP addresses—may not be recognized as title-held property,[292] they are generally alienable, with thriving secondary markets available for their sale and resale.[293]

But the unpropertied internet hampers wealth creation in at least two ways. First, despite court decisions finding that users have property interests in their cyber-resources,[294] providers continue to require users to agree that such resources are "not property" or that users acquire no property rights in them.[295] Of course, whether such contract terms can override the principle of inescapable property could be debated,[296] and there are decent arguments that they could not.[297] But providers' hostility to online property rights and their willingness to litigate against them[298] is a non-trivial deterrent to investment in and economic activity built on cyberproperty.

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291 *See* Nick Nugent, *Social Media Isn't a Public Function, but Maybe the Internet Is*, LAWFARE (Mar. 14, 2023), https://www.lawfaremedia.org/article/social-media-isnt-public-function-maybe-internet [https://perma.cc/G2XT-RJ57].

292 *See* Ernesto M. Rubi, *The IPv4 Number Crisis: The Question of Property Rights in Legacy and Non-Legacy IPv4 Numbers*, 39 AIPLA Q.J. 477, 478 (2011).

293 *See, e.g.*, Auction Listings of IPv4 Numbers, IPV4.GLOBAL, https://auctions.ipv4.global/ [https://perma.cc/PJ3B-NYRS?type=image] (last visited Sept. 14, 2024).

294 *See supra* subpart I.B.

295 *See, e.g.*, *Registrant Agreement*, CIRA § 3.2 (Apr. 1, 2022), https://cira.ca/registrant-agreement [https://perma.cc/4MFQ-SHGF] ("The Registrant acknowledges and agrees that a Domain Name is not property and that a Domain Name Registration does not create any proprietary right for the Registrant . . . .").

296 *See supra* Claim 1 in Part II.

297 *See* Nugent, *supra* note 99; FAIRFIELD, *supra* note 76.

298 *See* Evans v. Linden Rsch., Inc., No. C 11-01078, 2012 WL 5877579 (N.D. Cal. Nov. 20, 2012).

That hostility also makes cyberproperty less reliable for building intergenerational wealth, as recent disputes over "digital death" illustrate.[299] When users die, service providers routinely refuse to grant their heirs access to their accounts or any resources therein. Examples include Facebook's refusal to permit parents to access the account of their deceased fifteen-year-old daughter to understand the reason for her suicide[300] and Apple's four-year legal battle to prevent a widow from receiving family photos and videos stored in her late husband's account.[301] Had these digital resources been treated like any other kind of intangible personal property, normal succession rules would have seen them land smoothly in their heirs' hands rather than force those heirs to wage costly legal battles over the status of digital estates.[302]

Second, even if providers cannot contract away users' property interests *ab initio*, those interests are often revocable later on. Certain entitlements, such as Upwork connects, are forfeited each year if not used, even if purchased with real money.[303] And digital asset programs, such as the now-deprecated Reddit "coins," may be retired at any time, wiping out millions of user-held resources with a simple code or

299 *See generally* EDINA HARBINJA, DIGITAL DEATH, DIGITAL ASSETS, AND POST-MORTEM PRIVACY (2023).

300 *See Facebook Ruling: German Court Grants Parents Rights to Dead Daughter's Account*, BBC NEWS (July 12, 2018), https://www.bbc.com/news/world-europe-44804599 [https://perma.cc/X7AE-W57W].

301 *See* Mark Bridge & Jonathan Ames, *Widow Wins Long Battle for iPhone Family Photos*, THE TIMES (May 11, 2019), https://www.thetimes.co.uk/article/widow-wins-long-battle-for-iphone-family-photos-h7mv9bw7t [https://perma.cc/UU3J-2XA9].

302 The Uniform Law Commission has tried to address this problem through the Revised Uniform Fiduciary Access to Digital Assets Act (RUFADAA), which creates a framework for enabling executors or trustees to manage a decedent's digital assets and which has already been adopted in 49 jurisdictions. *See Fiduciary Access to Digital Assets Act, Revised*, UNIF. L. COMM'N (July 13, 2025), https://www.uniformlaws.org/committees/community-home?CommunityKey=f7237fc4-74c2-4728-81c6-b39a91ecdf22#LegBillTrackingAnchor [https://perma.cc/R7E6-FZ8P]. However, the RUFADAA framework is based primarily on consent mechanisms rather than on traditional concepts of property law and inheritance. *See, e.g.*, TENN. CODE ANN. § 35-8-108 (2025) ("Unless the user prohibited disclosure of digital assets or the court directs otherwise, a custodian shall disclose to the personal representative of the estate of a deceased user a catalogue of electronic communications sent or received by the user and digital assets, other than the content of electronic communications, of the user, if the representative gives the custodian: [certain documentation].").

303 *Understanding and Using Connects*, *supra* note 277.

contract change.[304] In addition to reserving the right to terminate service at any time, providers frequently disclaim any obligation to compensate users for their digital chattels if their accounts are terminated.[305] Even Amazon gift cards, which map one-to-one with the money used to purchase them, are lost forever when the holding account is closed.[306]

Moreover, as society increasingly moves online, we should not expect offline resources to anchor a person's wealth indefinitely. One could imagine an even more online society—perhaps as early as a decade or two from now—in which wealth and power are primarily a function of virtual items, such as metaverse holdings or other service entitlements.[307] If we reached that state—and we should not think it impossible that we would—such virtual items would be even more precariously held. The applicable service provider might decide to revoke a user's tuition credits or meeting space at any time or prevent the user from selling or bequeathing them to her children without the provider's permission, just as feudal lords could veto transfers of freehold tenures. Such a progression away from title-held property to service entitlements would instead represent a regression, an unfortunate resurrection of feudal practices thought long dead.

7. *Civilization*

I think it's safe to say that the absence of title-held property in cyberspace is unlikely to undermine the foundations of civilization or return us to a Hobbesian state. But there are nonetheless important parallels that can be drawn when we compare the internet to certain early stops in civilization's progressive journey.

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304 *See* Amanda Yeo, *Reddit is Ending Reddit Gold and Users are Furious*, MASHABLE (July 14, 2023), https://mashable.com/article/reddit-gold-coins-awards-system-remove [https://perma.cc/3QCR-6FKR].

305 *See, e.g.*, *Second Life Terms and Conditions*, SECOND LIFE §§ 3.4, 5.5 https://secondlife.com/app/tos/tos.php [https://perma.cc/K2YC-YV6T] (last visited Sept. 18, 2024).

306 *See What Happens When I Close My Account?*, AMAZON, https://www.amazon.com/gp/help/customer/display.html?nodeId=GBDB29JHRPFBDVYV [https://perma.cc/5ULB-5QNQ] (last visited Sept. 18, 2024) ("Your available Amazon.com Gift Cards balance will no longer be available for you to spend.").

307 *See* Jake Frankenfield, *Second Life Economy: What It Is, How It Works*, INVESTOPEDIA (Mar. 31, 2022), https://www.investopedia.com/terms/s/second-life-economy.asp [https://perma.cc/VTR5-982E] (noting that some "Second Life users have been reported to have accumulated vast fortunes by operating in the Second Life economy," including one user who had "become a virtual real estate magnate with [virtual assets] worth more than US $1 million").

Above, I stated that a future society in which most personal wealth is measured in online resources could return us to a feudal state if the providers from whom those resources originate exert total control over how they can be used or alienated.[308] But in at least one sense, the internet already resembles a feudal hierarchy. Both domain names and IP addresses originate from a single authority: the Internet Corporation for Assigned Names and Numbers (ICANN).[309] From that entity flow down delegations: domain names to operators of top-level domains (e.g., .com) and IP addresses to regional internet registries. In turn, those entities permit other providers—registrars and local internet registries—to dispense domain names and IP addresses to individual registrants who finally put them to productive use.

Or consider the phenomenon of wealth inequality, which many regard as a hallmark of regressive societies.[310] In fact, the early internet was widely regarded as an instrument of progress precisely because it seemed to level the playing field.[311] Whereas large incumbents held oligopolies on news, publishing, and entertainment in real space, the internet offered a meritocracy. Bloggers could break important news, e-celebrities were self-made, and long-form content could be published to the world without having first to secure buy-in from a gatekeeping publisher.[312] As the Supreme Court waxed in *Reno v. ACLU*, the early internet enabled "any person . . . [to] become a town crier with a voice that resonates farther than it could from any soapbox."[313] Coincident with this spirit of user

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308 Many scholars have noted the similarities between New Property regimes and historical feudalism. *See, e.g.*, GREG LASTOWKA, VIRTUAL JUSTICE 153 (2010); FAIRFIELD, *supra* note 76, at 19–21; Grimmelmann, *supra* note 120; Banta, *supra* note 78; Hemnes, *supra* note 224; *see also* LESSIG, *supra* note 153, at xvi (likening overly enforced IP systems to feudalism).

309 Technically, IP addresses originate from the Internet Assigned Numbers Authority (IANA), a function that ICANN has outsourced to another entity—Public Technical Identifiers (PTI). *See About Us*, INTERNET ASSIGNED NOS. AUTH., https://www.iana.org/about [https://perma.cc/G36R-QWHP] (last visited Sept. 14, 2024).

310 *See generally* Frederick Solt, *Economic Inequality and Democratic Political Engagement*, 52 AM. J. POL. SCI. 48 (2008); Christopher Reenock, Michael Bernhard & David Sobek, *Regressive Socioeconomic Distribution and Democratic Survival*, 51 INT'L STUD. Q. 677 (2007); DAVID DE FERRANTI, GUILLERMO E. PERRY, FRANCISCO H.G. FERREIRA & MICHAEL WALTON, INEQUALITY IN LATIN AMERICA (2004).

311 *See* George R.G. Clarke, *Bridging the Digital Divide* 1 (World Bank, Pol'y Rsch. Working Paper No. 2629, 2001).

312 *See generally* GLENN REYNOLDS, AN ARMY OF DAVIDS (2006).

313 Reno v. ACLU, 521 U.S. 844, 870 (1997).

egalitarianism was an only modestly capitalized ecosystem of online commercial operators. The service providers of the early internet were Davids compared to the Goliaths of offline media. And no small group of providers could be credibly accused of slurping up most of cyberspace's profits or wielding disproportionate power over political speech or electoral outcomes.

Compare that wistful past to today's internet, where 70% of online advertising revenues in the U.S. go to just three companies,[314] 30% of U.S. adults regularly get news on Facebook,[315] Amazon accounts for 38% of all online U.S. retail spending,[316] and eight of the ten most valuable companies on the planet (who boast a combined $20 trillion in market capitalization) are technology companies that make their revenues primarily from internet-enabled services and devices.[317] Against these modern internet giants, the average user, or even newspaper, hardly stands a chance.

To be sure, individuals and smaller companies can leverage these providers' platforms to make money for themselves, as the success of millionaire YouTubers and Instagram influencers shows. But the vast majority of such revenues still flow to the corporations rather than to the creators. And as some of these same companies work to create metaverse experiences in which users earn and spend their resources entirely within the four corners of a single walled garden, online environments may soon resemble the company towns of the early twentieth century, another regressive period in our country's progressive evolution.

8. *Improving Social Welfare*

Lastly, it's worth considering the loss of certain welfare-improving features of property. As explained, property helps to

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314 Melissa Otto, *Global Digital Advertising Revenues – A Look at the Big Three: Alphabet (GOOGL), Meta Platforms (META), Amazon.com (AMZN)*, VISIBLE ALPHA (May 17, 2023), https://visiblealpha.com/blog/global-digital-advertising-revenues-a-look-at-the-big-three-alphabet-googl-meta-platforms-meta-amazon-com-amzn/ [https://perma.cc/97RK-5KCD].

315 Jacob Liedke & Luxuan Wang, *Social Media and News Fact Sheet*, PEW RSCH. CTR. (Nov. 15, 2023), https://www.pewresearch.org/journalism/fact-sheet/social-media-and-news-fact-sheet/ [https://perma.cc/CAX9-ECDM].

316 Stephanie Chevalier, *Market Share of Leading Retail E-Commerce Companies in the United States in 2023*, STATISTA (May 22, 2024), https://www.statista.com/statistics/274255/market-share-of-the-leading-retailers-in-us-e-commerce/ [https://perma.cc/WG7A-3VBD].

317 *See Largest Companies by Marketcap*, COMPANIESMARKETCAP, https://companiesmarketcap.com/ [https://perma.cc/B5EV-T8Y8] (last visited July 19, 2025).

reduce negative externalities by forcing owners to internalize the costs of their actions and incentivizes them to better care for resources they exclusively hold. How applicable are these benefits to the digital world such that we should worry about their absence in cyberspace?

The absence of private property in cyberspace makes it difficult to internalize costs. In fact, it could be argued that the internet represents the single largest tragedy of the commons in human history. Most internet users are vagrants, wandering from website to website, with no place of their own. As a result, like one who attends a party at another's house, he has less incentive not to trash the place. If the cumulative effect of his and other users' behavior ruins an online space, it's costless for him to simply move to another. He doesn't have to clean up after himself.

Could the absence of title-held cyberproperty partially explain why people behave so poorly online? To be sure, anonymity and the lack of humanizing face-to-face contact do more than their fair share to foster internet trolls and flame wars. But the role of property in cabining human behavior should not be ignored. In real space, most people spend most of their time in homes that they wish to keep inhabitable or else in third-party buildings for which it is important that they not lose access. They also face transaction costs and limited options if they need to find substitutes for recreational venues that become intolerable. In the language of economics, property forces them to internalize the costs of their behavior. But without similar property dynamics online, others, both providers and the broader internet community, must collectively bear the cost of the troll's antics. Thus, the absence of private property in cyberspace creates conditions in which some of the worst forms of behavior are not adequately disciplined.[318]

C. Tailoring My Thesis

Having boldly stated my claims, it's time to qualify them a bit. The biggest risk in a project like this is making overwrought claims. Although many analogies can be drawn between the online and offline worlds, there are important differences.[319]

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318 For an alternative take, see James Grimmelmann, *The Internet Is a Semicommons*, 78 FORDHAM L. REV. 2799 (2010).

319 *See* Lastowska, *supra* note 33, at 43–44 (questioning contemporary arguments for cyberproperty); Lemley, *supra* note 33, at 523–25 (challenging the metaphor of cyberspace as a place).

To be digitally homeless is not to be physically homeless. The violation or "rape" of an avatar, no matter how realistic the depiction, cannot compare to a sexual assault committed against a real body. And online advertising, domain name administration, and alias forfeiture are far cries from the institutions of feudalism and coverture that were actually practiced in centuries past. Accordingly, some readers may question the danger of an unpropertied internet, thinking it less than ideal but hardly a cause for legislation.

To that anticipated criticism I'll respond with a thought experiment. Suppose Mark Zuckerberg's wildest dreams came true and society threw itself wholly into the metaverse. Every waking hour was spent with VR goggles on our heads, and all interactions that could happen virtually did happen virtually. Suppose citizens worked, shopped, educated, and socialized almost entirely within code-defined spaces controlled by private parties and their terms of service.

There's no doubt we'd see some new and interesting benefits. Many resources would be shareable with near-zero transfer costs. Total surveillance would ensure that fewer crimes are committed. And acceptable use policies might force people to speak less offensively than the First Amendment otherwise permits. Ida Auken's vision of an unpropertied society would become a reality.

But the downsides to such a thoroughly service-oriented society would also be undeniable. Each of the risks I presented in this Part would be heightened, the electronic harms perhaps beginning to approach some of the physical harms that occurred in earlier under-propertied societies. I hope readers would agree that a society that lived entirely in such an unpropertied state would indeed be an intolerable one.

Perhaps so, some might say. *But we're not there yet, and we may never be*. Granted. It therefore behooves me to tailor my thesis: An unpropertied internet presents significant risks to important individual and societal interests *but only insofar as* society has moved into cyberspace.

As such, think of society's digital transformation as a continuum. At one end of the continuum lie modern, yet basic, digital tools, such as the early, read-only internet. At the other end, society lives in the fully immersive metaverse I described above, where all private property has been replaced by private services and all control rests in the hands of private commercial actors. I would venture to guess that most readers have a click stop. Although they might not know exactly where it lies, each person would stipulate to some point along the continuum at

which the deprecation of property would go too far such that they would call for regulation to protect the important human interests described above.

In the next Part, I'll explore what that regulation might look like.

V
Propertizing the Internet

If the internet is indeed unpropertied, if the absence of private property has historically produced deleterious effects, and if similar deleterious effects are at risk of reappearing in a society that has moved online, then it is a worthy project to look for ways of avoiding those results. This Part embarks on that project by exploring both legal and technical mechanisms for introducing property ownership into the service-oriented internet.

A. Strengthen Horizontal Property Rights

Given that cyber-resources constitute property, they should be protected to the same degree as other forms of property. That means ensuring that resource-holders enjoy property's most important benefit: the right to exclude. The exclusionary right lies at the heart of most, if not all, of the property benefits we examined in Part III, from safeguarding privacy to avoiding tragedies of the commons. Unless both users and providers can stop others from messing with their online stuff, cyberspace will see few of property's benefits.

We can start by protecting against outright theft. No mature legal system should countenance a state of affairs in which a person has no legal recourse if someone else takes her property through superior strength or wit. And yet, conversion, the most fitting tort to stop would-be thieves, remains unavailable as a cause of action for millions of users and providers. Because some jurisdictions still cling to an antiquated version of the merger doctrine, we are left with the absurd result that a business deprived of a million-dollar domain name or block of IP addresses could achieve a full remedy or none at all depending on whether it's headquartered in California or Texas. The same is true for the humble user whose avatar and digital tokens might not appraise for any meaningful sum of money but for whom such items are central to her online identity and thus to her personhood.

Courts can prevent these injustices by relegating the merger doctrine to the historical dustbin or, at the very least, adopting the Ninth Circuit's electronically friendly interpretation

of it. Courts also should permit plaintiffs to obtain digital replevin—that is, to have their cyber-assets returned and not merely paid for in monetary damages—as another property-based remedy.

They can follow that up by making it easier to stop rivals from interfering with cyberproperty in ways that stop short of theft. Courts should abandon the material harm rule set forth in the Restatement, or at least the *Intel* Court's interpretation of it, when it comes to trespass claims. Any interference with cyberproperty should be potentially actionable as a tort.

Of course, doing so might raise concerns, expressed by many during the early cyberproperty debate, that such a regime could expose users to potential liability for normal, often innocent internet activity. Since an electronic communication inevitably consumes *some* resources on the recipient computer, would a user need to worry that sending an unsolicited email to a potential employer or a prospective love interest could potentially land him in court? What if he browses a seemingly public website without first getting permission?

But Epstein already put these concerns to rest more than twenty years ago. When a salesman walks up a driveway and knocks on a homeowner's door to hawk his wares, he's clearly traversing private property. Same thing if he also places a flyer on the windshield of the owner's car just for good measure. Unless the owner has displayed a "No Trespassing" sign, the salesman probably enjoys an implicit license to touch the door and windshield in these ways. Like other members of the public, social convention tells him that he need not worry about liability unless and until the owner tells him to go away. Social convention likewise indicates that users can generally traipse about online until told that a particular cyber-area is off limits to them.[320]

Also, as Epstein noted, no one will incur the high costs of litigation to recover what might be only nominal damages for receiving an unsolicited email or unwelcome web surfer. Even if courts permitted holders to enjoin *any* unwelcome interaction with their cyberproperty, no matter how trivial, litigation costs alone will ensure that resource-holders bring suit against only the most egregious online trespassers.

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[320] *See* CompuServe Inc. v. Cyber Promotions, Inc., 962 F. Supp. 1015, 1023–24 (S.D. Ohio 1997) (noting that "there is at least a tacit invitation for anyone on the Internet to utilize [an entity's] computer equipment to send e-mail to its subscribers" until specifically told otherwise).

Courts should also limit the power of providers to force users to disclaim their *own* horizontal property rights. As explained above, whenever providers allow users to access online systems or obtain cyber-resources, those providers create cyberproperty and grant users interests in that property. Under the principle of inescapable property, they can't avoid doing so. Moreover, because providers maintain vertical control over that property through their terms of service, they usually define the nature of those interests, whether license, lease, or even title. That's probably all as it should be; otherwise, users could grind a provider's operations to a halt.

But just because a provider should be able to tell a user that she licenses rather than owns a given cyber-resource (i.e., to define the user's vertical rights) doesn't mean that same provider should have *carte blanche* to wipe out the user's horizontal rights. Courts should therefore look with skepticism on terms of service that limit the ability of users to exclude other users from their cyberproperty or to bring trespass or conversion claims to prevent such interference.

B. Strengthen Vertical Property Rights

As important as it is to tend to cyberproperty's horizontal nature, strengthening its vertical axis is even more crucial. That means facilitating ownership.

Of course, that's easier said than done. Strengthening horizontal property rights is relatively straightforward, even if we're talking about cyber-resources. Just give holders the legal right to exclude peers from their resources. That doesn't entail forcing anyone to do anything other than to get out. But creating conditions under which providers and users alike can truly own their online resources does. Owing to the perfectly service-oriented nature of the internet, there's an inexorable verticality to any cyber-resource. The law cannot grant a person true title to any online resource without pressing someone else into service.

Obviously, the Thirteenth Amendment prevents the state from protecting a user's "boost" entitlements by requiring Tinder to stay in business if it would otherwise prefer to close shop. But even if the state guaranteed only that users could hold onto their digital chattels *for so long as* a company stayed in business, that guarantee would present the classic problem of forced carriage.

Forced carriage (more commonly known as "common carriage") occurs when the law obligates a firm to provide services to a customer it would otherwise prefer not to serve, whether for

economic or ideological reasons.[321] For example, inns, ferries, trains, package deliverers, and telephone operators have historically been regulated as common carriers, whereby the law has required them to serve the public and prevented them from discriminating against lawful customers.[322] More recently, in response to concerns that Big Tech was allegedly "censoring" conservative viewpoints, Texas and Florida each passed laws prohibiting social media companies from banning, suspending, or de-amplifying users based on their viewpoints.[323]

Imposing common carriage in the online space, however, can raise First Amendment issues. For example, social media companies have long argued that their content moderation policies are inherently expressive.[324] When they decide to allow users to express certain viewpoints on their platforms (say, LGBT pride) while banning those who express certain other viewpoints (say, Holocaust-denial), they are exercising the kind of editorial discretion practiced by newspapers. The Supreme Court seemed to agree with that position in its recent *Moody v. NetChoice* decision,[325] vindicating the editorial rights of online service providers to decide for themselves which user accounts to allow. Thus, if a user's property interest in his YouTube account prevented Google from banning him because he posted videos containing vaccine misinformation, that "property" system would operate like a forced carriage regime. And it would be subject to the same First Amendment constraints.

One potential response to these constitutional problems is to look to portability as a solution. Rather than require a provider to continue to serve a user it disfavors, simply grant the user a legal right to migrate her cyberproperty elsewhere.

For example, customers currently enjoy the right—albeit a right granted by ICANN rather than by law—to transfer their registered domain names from any domain name registrar to any other ICANN-accredited registrar.[326] IP address holders can likewise sometimes move their IP address holdings between the world's five regional internet registries. Such portability helps

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321 *See* Blake E. Reid, *Uncommon Carriage*, 76 STAN. L. REV. 89, 108–09 (2024).

322 *See* Yoo, *supra* note 114, at 995–96.

323 *See* TEX. BUS. & COM. CODE ANN. § 120.103 (West 2025); FLA. STAT. § 501.2041 (2022).

324 *See* NetChoice, LLC v. Att'y Gen., 34 F.4th 1196, 1215 (11th Cir. 2022).

325 *See* Moody v. NetChoice, LLC, 144 S. Ct. 2383 (2024).

326 *See Transfer Policy*, ICANN (Feb. 21, 2024), https://www.icann.org/en/contracted-parties/accredited-registrars/resources/domain-name-transfers/policy [https://perma.cc/MG4K-GERZ].

to ensure that customers cannot be so easily deprived of their core internet resources (which may be valued at millions of dollars) simply because a given provider goes out of business or decides to cut ties with a customer. It also makes such resources alienable, enabling secondary markets to emerge that promote allocative efficiency.

But portability doesn't fully solve the ownership problem for at least three reasons. First, some cyber-resources are intractably unique, by which I mean that they depend on unique features offered by only a single provider such that no other providers exist to which they could be transferred. Given the standard protocols of the domain name system, a domain name can function just as well if transferred from the care of one registrar to another. But the same cannot be said of one's Upwork connects or Bumble coins. A legal right to transfer one's virtual pet out of Second Life is useful only if there's somewhere for digital Fido to go.

European regulators learned as much when crafting the EU Data Act. That legislation, which requires cloud computing companies to allow customers to move their data to other cloud providers,[327] initially included a provision on *workload* portability. As originally drafted, providers had to ensure not only that customers could move bits and bytes (as platform-independent as it gets) between services but also that customers could migrate sophisticated workloads like websites, mobile app backends, and AI models to their competitors.[328] The problem was that those workloads often depended on unique bells and whistles offered by different providers. Nor did providers have any control over what features their *competitors* offered in order to ensure that customers had an offramp. After much justified blowback, the EU Commission was forced to remove the workload portability requirement.[329]

Second, even if some other provider could host a transferred cyber-resource, the *value* of that resource might vitally depend on the original provider and its ecosystem. For example, the structure and behavior of a social media profile could theoretically be standardized across the industry and made exportable as a structured data file. But the value of such a digital identity is more a function of the specific social network in

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327 *See Data Act*, EUR. COMM'N (Sept. 9, 2024), https://digital-strategy.ec.europa.eu/en/policies/data-act [https://perma.cc/ULL6-MNF4].

328 Based on my experience negotiating with the EU Commission as an attorney for Amazon.

329 *Id.*

which it exists, including its connections to other digital identities (friends, followers, etc.) within the same system, than the basic operation of the profile itself. An influencer with a million followers on Instagram, therefore, loses everything if she is forced to migrate to an alternative provider in which few people maintain accounts. And enabling a user to transfer his Warframe virtual currency to Stardoll means nothing if he planned to use it to purchase a slick rocket launcher but can now use it only to buy virtual doll accessories.

Finally, even if a cyber-resource could be exported to another online provider while preserving its value, such portability wouldn't change the fact that the resource will continue to depend on the services of other parties. Even if a user decides to self-host an exported cyber-resource, the user's hosting activities will require other parties to continually perform underlying services like packet transport and domain name resolution. Such is the nature of the perfectly service-oriented internet, which limits the ability of users to become self-sufficient and thereby guarantee the existence of their cyber-assets.

Accordingly, unless the internet is rearchitected to enable fully self-sufficient assets, we must resign ourselves to the fact that we can never achieve true ownership in cyberspace the way we can with physical or analog goods. But we can still strengthen vertical rights in cyberproperty in ways that approximate ownership. I now offer three suggestions for doing so. As I hope will be seen, these suggestions lie on the modest side of the spectrum. They would not require us to fundamentally rearchitect the internet or to slow down innovation. Rather, the law can cut with the grain by simply codifying what are otherwise organic developments in technology and industry.

1. *Establish Property Rights for Core Internet Resources and Essential Services*

While many internet resources are currently too heterogeneous or provider-specific to create conditions for permanent ownership, the same cannot be said of core internet resources. Domain names and IP addresses are essential to operating publicly accessible websites and, thus, to publishing viewpoints online. To be denied these resources is effectively to be booted from the internet.[330] They also enable users to establish their own digital realty (e.g., websites) on which users can build and

330 *See* Nugent, *supra* note 30, at 581.

maintain their own digital chattels without requiring any other website or hosting provider to continually provide services.

Fortunately, such resources have been standardized and are portable between providers. Moreover, the industry already treats them like property, offering highly effective secondary marketplaces that help such assets to move around with Coasean efficiency.

It's time for the law to codify what the industry already recognizes. These assets should be statutorily enshrined as property (intellectual or otherwise) and protected as such. Registrants should be granted title to their domain names and IP addresses upon registration, and they should be protected by traditional torts of conversion and trespass to chattels against providers who would revoke them merely for violating terms of service. To be sure, policymakers would need to find ways of protecting the interests of important intermediaries like registry operators and regional internet registries when asset holders engage in fraud or fail to pay the maintenance fees these operators depend on to run the internet. But these are not hard problems to solve.

Such a policy would indeed conscript core intermediaries as common carriers. But as I've argued elsewhere, these intermediaries have no First Amendment interests in how they administer basic names and numbers.[331] And the future of open discourse on the internet critically depends on recognizing a set of basic non-discrimination rights within the deepest layers of the internet.[332] Forced carriage is therefore entirely appropriate in this arena.

It may also be appropriate for other online services that are particularly essential to modern life and for which providers' speech interests are particularly weak. For example, if most transportation became accessible only through private, on-demand online services, as Auken dreamed, or groceries could be obtained only through online ordering services, then users' online entitlements to those resources would become particularly important. And the law should protect those entitlements as title-held property, even if they were obtained using online sweat equity rather than cash and even if providers were forced into service (but only for as long as they remained in business).

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331 *Id.* at 612.

332 *Id.* at 604–09.

2. *Standardize Mature Technologies*

Once a given technology has attained maturity, the law should play a role in standardizing it to create interoperability, and thus portability, between providers. Although, as described above, portability does not remove every vertical string that attaches to cyberproperty, it can sever many of them and give holders greater stability in their online resources. It can further do so without subjecting providers to forced carriage.

Could there ever be a future in which, for example, social media became so homogenized that users could seamlessly port their accounts, content, and entitlements between the services? Perhaps yes. Federated, decentralized social media networks, such as Mastodon and BlueSky, are beginning to challenge long-established players like Twitter/X and Instagram along with their bespoke, proprietary architectures.

For example, by leveraging the open-source Authenticated Transfer Protocol, BlueSky permits anyone to create their own instances (i.e., social media servers/environments), which can then join the BlueSky network and enable their users to follow, interact with, and share content with users on other instances. The result is the best of both worlds. Users can create their own digital realty in which their digital identities and chattels can live—according to their own rules, no less—yet still participate in the broader social network that makes those self-constructed resources valuable.

It's also important not to take a short-term view about the possibilities of interoperability, looking only to today's technologies or those of the last five years. If we simply zoom out another decade or so, we can see many examples of once-bespoke technologies that are now boringly standardized. Such technologies include web browsers,[333] media encoding,[334] and authentication mechanisms.[335] And despite its still nascent state, we can already see standards emerging around virtual and augmented reality hardware and software.[336]

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333 *See Web Standards*, World Wide Web Consortium, https://www.w3.org/standards/ [https://perma.cc/6CE2-2EXB] (last visited Sept. 9, 2024).

334 *See* MPEG, https://www.mpeg.org/ [https://perma.cc/H76D-92AK] (last visited Sept. 9, 2024).

335 *See Centralized Identity Standards*, Ping Identity, https://www.pingidentity.com/en/resources/identity-fundamentals/authentication-authorization-standards.html [https://perma.cc/DP6L-F94A] (last visited Sept. 9, 2024).

336 *See Standards*, IEEE Digital Reality, https://digitalreality.ieee.org/standards [https://perma.cc/TZ2S-8WHX] (last visited Sept. 9, 2024).

In some cases, this homogenization occurred because the industry organically decided to cooperate on open standards through bodies like the W3C, IETF, IEEE, or ISO. Even the pre-regulation, cutthroat railroad industry had already privately agreed on a four-foot, eight-inch track gauge to ensure that trains could seamlessly traverse different proprietary rail lines long before the Interstate Commerce Commission was formed in 1887 to regulate the industry.[337] In that case, and others like it, legislation functioned mostly to codify existing industry consensus.

In other cases, government has played a role in coaxing industries into common, consumer-beneficial standards. For example, the federal Health Information Technology for Economic and Clinical Health (HITECH) Act established standards to ensure interoperability between different electronic health record systems, ensuring that health data could be seamlessly transferred between health care providers.[338] And electronic funds transfer (EFT) regulations ensure that money can be safely transferred between different banking institutions and financial services.[339] More recently, the European Union has taken the lead in corralling web and mobile phone players to implement common, consumer-friendly standards, such as the Rich Communication Services (RCS) messaging standard to enable read receipts and other compatibility features between iPhone and Android devices,[340] USB-C chargers for mobile phones,[341] and data portability between cloud computing providers.[342]

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337 *See generally* Douglas J. Puffert, *The Standardization of Track Gauge on North American Railways, 1830–1890*, 60 J. Econ. Hist. 933 (2000).

338 Janet Marchibroda, *Interoperability*, Health Affairs (Aug. 11, 2014), https://www.healthaffairs.org/content/briefs/interoperability [https://perma.cc/VB79-CSNE].

339 *See Electronic Fund Transfer Act*, FDIC 1 (Feb. 2019), https://www.fdic.gov/news/financial-institution-letters/2019/fil19009b.pdf [https://perma.cc/XD8N-T474].

340 *See* Rachyl Jones, *Apple Folds for a Third Time to the EU, and It Means iPhone Users Can Now Get 'Read' Receipts When Texting Their Android Friends*, Fortune (Nov. 16, 2023), https://finance.yahoo.com/news/apple-folds-third-time-eu-223328487.html [https://perma.cc/34CM-WLCG].

341 *See* Jon Porter, *EU Sets December 28th, 2024, Deadline for All New Phones to Use USB-C for Wired Charging*, The Verge (Dec. 8, 2022), https://www.theverge.com/2022/12/8/23499754/usb-c-iphone-european-union-legislation-charger-lightning-enforcement-date [https://perma.cc/5K35-ZT8G].

342 *See Data Act*, *supra* note 327.

3. *Provide Consumer Protections for Nascent or Intractably Unique Services*

That brings us to the question of what should be done about technologies that are not yet mature enough for standardization and, thus, interoperability.

First, it must be acknowledged that some services are intractably unique. There is probably no future world in which a user should expect to be able to transfer a Fortnite sniper rifle to Pokémon. Sorry, gamers. We should not expect online games or virtual worlds to organically homogenize to the point that regulators could simply nudge these industries over the line by requiring them to implement standards to which they already largely adhered. Given that such experiences are less likely to be essential to modern life, that result seems acceptable.

But for those intractably unique services and for those nascent services that have the potential to standardize in the future, the law can still play an important role in the online propertization project by creating basic consumer protections. Here are a few ideas.

Establish Liquidation Rights. As a general principle, users should be able to liquidate their digital resources by converting them into real-world currency. Of course, the devil is in the details when it comes to a statement like that. Even in the offline world, consumer entitlements do not always enjoy liquidity. Consumers who get their tenth cup for free at the local coffee shop typically can't elect to receive cash instead. Plane tickets are generally non-transferrable. And stock options and puts, even when purchased with cash, have expiration dates. The law should therefore take a flexible approach, determining whether to grant users liquidation rights by balancing the equities between user and provider and protecting consumer rights through *ex post* enforcement, such as through Section 5 of the Federal Trade Commission Act.

To offer a basic framework, a user's case for liquidation rights should be at its highest when a provider terminates the user's account or retires an existing entitlement program after the user previously paid real-world money for her now-vaporized assets.[343] And it should be lowest when the user's assets were earned solely through her onsite conduct, such as by answering other users' questions or vanquishing the boss monster in level 3 of an online game. Situations falling between

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[343] *See, e.g.*, Evans v. Linden Rsch., Inc., No. C 11-01078, 2012 WL 5877579 (N.D. Cal. Nov. 20, 2012).

these extremes (e.g., purchased entitlements that have expiration dates) would need to be considered on a case-by-case basis. Although many claims by users against their providers to demand liquidation rights might fail, the threat of consumer lawsuits or FTC actions would at least incentivize providers to offer such rights more frequently than they do today.[344]

Ensure Alienability. The law looks skeptically on alienation restraints when it comes to physical goods.[345] That same skepticism should arise when online service providers prevent users from reselling or even transferring their digital resources to other users. Not only would protecting alienability bring digital goods closer to their physical cousins, but removing transfer barriers would improve social welfare by helping online resources to end up in the hands of those who value them most.

Again, this protection should be granted only within reason. Building and operating transfer mechanisms cost money, and providers should be able to recoup those costs (plus a profit) by charging reasonable transfer fees and imposing reasonable limitations on transfer frequency. Moreover, for all the reasons that the law does not recognize any right to resell digital books, songs, or movies, this right of alienation need not extend to intellectual property licenses. That's not to say I object to the concept of a digital first sale doctrine (I don't), but that's a battle for another day.

Strengthen Privacy. The law should also strengthen users' privacy rights in their digital spaces. Just as tenants enjoy certain constitutional and statutory rights to privacy in their physical dwellings, users should enjoy similar rights in their online spaces. For example, the Electronic Communications Privacy Act generally prevents telephone companies from intercepting (i.e., monitoring) subscribers' phone conversations.[346] Privacy scholars have called for similar restrictions on the behavior of online service providers.[347] As noted, some providers have even architected their services to prevent themselves from gaining access to their customers' content or communications.[348] While the law need not go that far, it could impose ECPA-like protections for certain industries.

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344 *See, e.g.*, *id.* (providing an example of successful user class action suit).

345 *See* 63C Am. Jur. 2D *Property* § 44 (2025).

346 18 U.S.C. § 2511.

347 *See, e.g.*, Digital Due Process, https://digitaldueprocess.org/ [https://perma.cc/RT8H-NZ2X] (last visited Sept. 9, 2024). *See generally* Shoshana Zuboff, The Age of Surveillance Capitalism (2019).

348 *See* text accompanying notes 283–284.

4. *What about Blockchain?*

I've stated in multiple places in this Article that ownership of cyberproperty is not merely difficult; it is impossible. That's on account of the principle of inexorable verticality described above. The reforms offered in this Part don't completely free cyberproperty from vertical control, but they do cabin its power. Such reforms provide the conditions for cyber-resources to function like title-held property, even if they can never match the independence of physical land and chattels.

But some might argue that blockchain technology already has the potential to enable true digital ownership without the need for regulators to intervene. Indeed, technologist and venture capitalist Chris Dixon has argued that the invention of the blockchain has birthed a new internet era. Whereas the early days of the internet, when people largely used the medium to consume static content, could be described as the "Read Era," and the "Web 2.0" technologies that enabled users to easily publish their own content through blogs and social media characterized the "Read-Write Era," blockchain has ushered in the new "Read-Write-Own Era" (also known as "Web 3.0"), in which users can finally, truly own their digital assets.[349]

The logic goes something like this. Bitcoin and other blockchain-based cryptocurrencies store information in a distributed ledger (the blockchain) that no one entity controls. More than that, because the information is cryptographically encoded, nobody has the power to alter that information without the consent of the relevant parties. While the information stored in a Bitcoin or Ethereum blockchain represents units of currency, there's no reason other kinds of information couldn't be stored in a blockchain ledger, and indeed they already are. Licenses to purchased MP3s, avatars, titles to digital artwork, even software—all are simply information that can be cryptographically stored on a capable blockchain. Thus, when it comes to digital information, the blockchain provides both portability (or one might say provider-independence) and immutability (no one can alter or take the information away), two of the hallmarks of traditional property.

Blockchain indeed brings us closer to ownership, and there's little doubt that one can own Bitcoins and non-fungible tokens (NFTs), both of which are forms of virtual property.[350]

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349 *See* CHRIS DIXON, READ WRITE OWN, at xxi–xxiv (2024).

350 *See* U.C.C. art. 12 (A.L.I. & UNIF. L. COMM'N 2022) (recognizing blockchain and cryptocurrency assets as property and providing rules around securing and transferring such property in commercial transactions).

But currency and title records (which are essentially what NFTs represent) could just as easily be stored on paper ledgers or precious metals. They are not service outputs and do not depend on services to exist in the same way as cyber-resources. Their portability and immutability therefore make sense and do not detract from their utility.

Dixon and other Web 3.0 evangelists think that blockchain could also solve the problem that is cyberproperty. The idea is to use the blockchain to store not only static data, like records and entitlements, but to run operations—that is, to execute software. Already, smaller applications have been developed that are capable of running on the Ethereum blockchain as proofs of concept. But the hope is that we can eventually ditch centralized web applications like Reddit and YouTube altogether in favor of social media networks and content streaming services that run on thousands (or millions) of independently operated computing nodes. Without a central authority to call the shots, no user could be kicked off a web service and no service entitlements could ever be revoked.

Perhaps. But theory must give way to practicality. And there are good reasons to doubt that fully decentralized, blockchain-powered internet services will ever go mainstream. In the first place, they are remarkably slow. What else could they be when they require cryptographic verification to operate, and data must constantly be juggled across a diaspora of separately owned computers? Second, they are likely to be clunky to update and improve, which is table stakes if they are to compete against trillion-dollar incumbents that employ armies of developers to update their codebases daily. Finally, and most importantly, internet applications need content moderation along with the ability to boot misbehaving members, if only to provide an environment that is tolerable for other users and to remove illegal content. Until blockchain adequately addresses these and other limitations—and I remain skeptical that it can—blockchain will function as just one of multiple tools in the cyberproperty toolbox—and perhaps a very important one—but not as the key to unlocking digital ownership.

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As should be apparent, the above are all incomplete solutions to the problem of an unpropertied internet. But the goal should not be to force cyberspace to look just like real space. As long as cyberspace depends on the continued provision of services by private operators (and it likely always will), there will never be perfect parity between the online and offline worlds. Nor should there be. The goal of this project is not to

eliminate the service-oriented nature of the internet but to find ways to layer property onto it so that society does not lose the valuable, progressive, property-based rights it has so carefully built and benefited from over the millennia.

Conclusion

It is a curious fact of life that new innovations sometimes resurrect old problems. It is likewise counterintuitive that ancient tools and remedies can sometimes solve vexing challenges that elude modern, more sophisticated techniques. Few human inventions are as ancient as the institution of property. Yet property continues, even today, to play a crucial role in ordering society in ways that protect individual liberties and improve social welfare.

It is tempting to believe that the internet, which has supplanted countless older practices, can likewise supplant property-based systems by providing more modern means for allocating and distributing limited resources. Or, rather, because the internet is doing precisely that, it is tempting to believe that any losses that might result from the death of property will be more than offset by gains in progress and prosperity.

But property is not so easily replaced. It provides crucial benefits that contracts, regulation, and even technology are hard-pressed to reproduce. Those benefits flow from property's inherent attributes, such as its (often) rivalrous nature, its permanence, and its tendency to force (and enable) owners to internalize the externalities of their actions. Moving to a more flexible, service-based economy unlocks exciting new possibilities, from greater access to knowledge to the ability to rapidly consume and dispose of shared resources. But such changes produce other deeply concerning consequences. They create a society in which humans must obtain permission for nearly every action and in which private parties thereby gain veto rights over wide swaths of public speech and conduct. They create digital tragedies of the commons in which users can behave at their worst, leaving the broader internet community to collectively bear the costs. It is therefore crucial not to allow property to go by the wayside as society rushes headlong into a space that doesn't recognize it.

Introducing property ownership into cyberspace will by no means be straightforward. It will require wisdom to discern when a resource becomes capable of commodification, care to avoid foisting carriage on providers that have strong speech interests, and patience to give industries the breathing room

they need to innovate. It will also require no small amount of technical innovation to enable cyberproperty to sometimes live independently of any one provider. But law, no less than technology, is capable of rising to the challenge.

How far society's digital transformation will go is anyone's guess. The spectrum of possibilities ranges from today's website-centric internet to an immersive experience just shy of The Matrix. The stage in this evolution at which the law should intervene by creating title rights to cyberproperty could be debated. Each reader is bound to draw a different line in the sand. But there can be little doubt that society is currently moving in only one direction. And the point at which that transformation could reduce individual rights and accumulate private power severely enough to make most people's lives unrecognizable from what they are today may not be that far away. It therefore makes sense to begin considering this problem now.