

### NOTE

Thank you for reading this draft of my article. Please note that this is very much a **work in progress**. You'll notice that the second half of the piece hasn't been fully footnoted yet, and even the first half's footnotes still need work. If you've written in this space and I haven't cited you, please let me know (it's also possible your writings are already in the pile of references I'm still working through and planning to footnote).

Any feedback is most welcome!

## THE UNPROPERTIED INTERNET

Nicholas J. Nugent\*

**Abstract:** Decades of debate over online copyright infringement, cyber-trespass, and rights over personal data have obscured an important but largely overlooked fact: Although property rights permeate much of what is distributed over the internet, cyberproperty itself has yet to be legally recognized.

To be sure, providers or users may hold copyrights in online content or trademarks to online branding (property made available through the internet); may acquire title, leases, or indefeasible rights of use to servers, routers, or subsea cables (property used to operate the internet); and may exclusively own their computers and smartphones (property used to access the internet). But when it comes to online identities, site-specific entitlements, domain names, IP addresses, and even websites—resources and spaces that are unique to and that define cyberspace—the law has yet to recognize anything approaching title rights. Put simply, the internet is, and always has been, unpropertied.

In times past, when the internet functioned merely as a tool or supplement to our daily lives, the lack of online property was no more concerning than the absence of property in telephone or satellite television services. But as more 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 property rights are weak or non-existent, from tragedies of the commons to the absence of privacy to deep inequality.

Drawing from case studies on feudalism, coverture, racial inequality, and other topics, this Article explores the degree to which the problems that have presented themselves in unpropertied societies in real space are likely to re-present themselves in a modern society that lives online. It also makes a provocative new claim that many of the problems that currently plague the internet arise not because property rights are too strong but because they are far too weak. Finally, it offers a handful of proposals to introduce modest property rights into cyberspace, with options spanning regulation, private ordering, and technological solutions.

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\* Assistant Professor of Law, University of Tennessee.

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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, and 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.<sup>1</sup> 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.

Without places to call their own, denizens of an unpropertied society might enjoy far less privacy.<sup>2</sup> The right to exclude, often regarded as the foundational right in the property owner’s bundle of sticks,<sup>3</sup> 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.<sup>4</sup> 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.<sup>5</sup>

Societies with weak or non-existent property rights also have checkered histories, to put it mildly. Disregarding self-ownership, the most basic

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<sup>1</sup> Felix S. Cohen, *Dialogue on Private Property*, 9 RUTGERS L. REV. 357, 361-63 (1954).

<sup>2</sup> See Aaron Perzanowski & Jason Schultz, THE END OF OWNERSHIP 7 (2016); Margaret Jane Radin, *Property and Personhood*, 34 STAN. L. REV. 957, 997 (1982).

<sup>3</sup> See Thomas W. Merrill, *Property and the Right to Exclude*, 77 NEB. L. REV. 730, 758 (1998).

<sup>4</sup> See John Trenchard and Thomas Gordon, *Of freedom of speech*, Letter No. 15, February 4, 1720, 1 CATO’S LETTERS: OR ESSAYS ON LIBERTY, CIVIL AND RELIGIOUS, AND OTHER IMPORTANT SUBJECTS, 96 (3d ed. 4 vols. London 1733).

<sup>5</sup> See D. Benjamin Barros, *Property and Freedom*, 4 N.Y.U. J. L. & LIBERTY 36, 64 (2009); Richard Epstein, TAKINGS 138-39 (1985).

property right a human can have, played a key role in justifying slavery<sup>6</sup> and in denying married women the right to their own legal identity under coverture.<sup>7</sup> Setting aside the moral case, Communism, with its aim of abolishing private property,<sup>8</sup> brought poverty to millions by inefficiently allocating resources and destroying incentives for production.<sup>9</sup> And we recognize present-day democracies as underdeveloped, or backsliding, where property ownership is wildly unequal.<sup>10</sup>

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 underpropertied 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.<sup>11</sup>

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.<sup>12</sup> In the offline world, public spaces such as parks, sidewalks, and streets provide valuable public benefits.<sup>13</sup> They offer free venues for leisure and exercise.<sup>14</sup> They enable picketers to shame neighboring institutions.<sup>15</sup> And they offer a “free speech subsidy” to those who wish to use them for rallies or other forms of

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<sup>6</sup> See Peter Halewood, *On Commodification and Self-Ownership*, 20 YALE J.L. & HUMAN. 131, 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).

<sup>7</sup> See Jill Elaine Hasday, *Contest and Consent: A Legal History of Marital Rape*, 88 CALIF. L. REV. 1373, 1424 (2000).

<sup>8</sup> See Karl Marx & Friedrich Engels, MANIFESTO OF THE COMMUNIST PARTY (1848) (“[T]he theory of the Communists may be summed up in the single sentence: Abolition of private property.”).

<sup>9</sup> See Gary Saul Morson & Morton Shapiro, *Minds Wide Shut* 168-175 (2021); Robert Conquest, REFLECTIONS ON A RAVAGED CENTURY (2000); Nikolai Petrovich & Vladimir Mikhailovich Popov, THE TURNING POINT: REVITALIZING THE SOVIET ECONOMY (1989).

<sup>10</sup> See Francis Fukuyama, POLITICAL ORDER AND POLITICAL DECAY (2014); Daron Acemoglu & James A. Robinson, WHY NATIONS FAIL (2013).

<sup>11</sup> See U.S. General Services Administration, *Technology Modernization Fund announces targeted investments to improve digital customer experience and enhance data protection* (Jul. 6, 2023), <https://www.gsa.gov/about-us/newsroom/news-releases/technology-modernization-fund-announces-targeted-i-07062023>.

<sup>12</sup> See Dawn Numziato, *The Death of the Public Forum in Cyberspace*, 20 BERKELEY TECH. L.J. 1115, 1116 (2005).

<sup>13</sup> Noah D. Zatz, *Sidewalks in Cyberspace: Making Space for Public Forums in the Electronic Environment*, 12 HARV. J. LAW & TECH. 149 (1998).

<sup>14</sup> *Id.* at n. 34.

<sup>15</sup> *Id.*

public expression.<sup>16</sup> Because the internet lacks comparable public spaces, internet users generally cannot gather in venues uncontrolled by commercial actors, cannot “picket” deplorable websites, and cannot express themselves to the extent otherwise permitted under the First Amendment.<sup>17</sup> 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, but it also lacks *private* property.

That might seem like a debatable proposition. 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,<sup>18</sup> a disappointingly tangible and terrestrial affair.

Finally, we must reckon with our intuition that cyberspace *feels* like a place.<sup>19</sup> Even our vernacular expresses this feeling. We “visit” websites. We “meet” people, perhaps even our spouses, in online venues.<sup>20</sup> We even worry about the degree to which persons or cultures “live online” rather than in the physical world.<sup>21</sup> And certain current developments, such as the metaverse, aim precisely to make online spaces as indistinguishable as possible from their offline doppelgangers.<sup>22</sup>

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

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<sup>16</sup> Nunziato, at 1117; Jack M. Balkin, *Frontiers of Legal Thought II The New First Amendment*, 1990 DUKE L.J. 375 (1990).

<sup>17</sup> Zatz, *supra* note \_\_, at 148.

<sup>18</sup> Cloudflare, *What is the cloud?*, <https://www.cloudflare.com/learning/cloud/what-is-the-cloud/>.

<sup>19</sup> See Dan Hunter, *Cyberspace as Place and the Tragedy of the Digital Anticommons*, 91 CALIF. L. REV. 439 (2003); William J. Mitchell, CITY OF BITS: SPACE, PLACE, AND THE INFOBAHN 114-15 (1995).

<sup>20</sup> See Michael J. Rosenfeld, *Disintermediating your friends: How online dating in the United States displaces other ways of meeting*, PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES (Aug. 20, 2019).

<sup>21</sup> See Ada Lovelace Institute, *Living online: the long-term impact on wellbeing* (Dec. 8, 2020), <https://www.adalovelaceinstitute.org/feature/living-online-long-term-impact-wellbeing/>; <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9884050/>.

<sup>22</sup> 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>.

internet, or even to property that can be found *on* 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 might best be referred to as “cyberproperty.”

Cyberproperty enjoys little to no protection under U.S. law. Users cannot “own” their online accounts or aliases in a way that generally prevents service providers from taking away their digital identities.<sup>23</sup> Ancient property doctrines empower the owner of a physical chattel to use, transfer, or sell it as he pleases.<sup>24</sup> But because online assets are the product of *services*, they are governed by contracts rather than property rules. Online service providers can therefore exert exquisite control over what users do with their digital chattels, limited only by the imagination of their contract-drafting lawyers.<sup>25</sup> And even if an enterprising user wished to create his own digital realm, in the form of a new website or online service, so that he might create and control his own cyberproperty, he could be stymied in that effort if private providers of core internet resources like domain names, IP addresses, and network connectivity decided to revoke them.<sup>26</sup> Put simply, the internet is, and always has been, thoroughly 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.<sup>27</sup> Essential activities like banking, education, healthcare, and news consumption have not only moved online but have done so to the neglect of their withering offline analogs.<sup>28</sup> And those who lack the resources or skills to participate in the new online economy, whether individuals or nations, risk becoming permanently marginalized.<sup>29</sup>

Yet those who do manage to ride the tide of society’s digital transformation face another danger. If cyberspace lacks property, and if society is throwing itself headlong into that privatized virtual 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

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<sup>23</sup> See Section I.A.

<sup>24</sup> Perzanowski, 16-17.

<sup>25</sup> *Id.*

<sup>26</sup> See Section I.C.

<sup>27</sup> See Section III.A.

<sup>28</sup> See Ada Lovelace Institute, *Living online: the long-term impact on wellbeing* (Dec. 8, 2020), <https://www.adalovelaceinstitute.org/feature/living-online-long-term-impact-wellbeing/>.

<sup>29</sup> 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>.

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. In Part I, I explain what I mean when I say that the internet is unpropertied. To structure the analysis, I divide online resources into three categories: digital identity, digital chattels, and digital realty. I then show how the absence of cyberproperty in each of these categories impacts users in distinct ways.

Part II makes the case for property in general. I start by acknowledging some of the traditional critiques against property based on economic, environmental, and feminist considerations. I also describe recent internet-powered movements to improve information and resource sharing, as typified by the Creative Commons movement and the circular economy. Then, wholly apart from cyberspace, I describe the benefits that property brings. I demonstrate how property is central to personhood, liberty, privacy, free expression, and wealth, all of which serve to show that property is a fundamentally *progressive* tool. And I note the harms that have befallen both individuals and societies when property rights have been weak or non-existent.

Part III applies these learnings to the internet. I argue that an unpropertied internet threatens to deprive users of important interests, depending on the degree to which society abandons the physical for the virtual. After revealing how the absence of cyberproperty creates tragedies of the commons that encourage destructive behavior and how it exacerbates inequality, I reach the surprising conclusion that the modern internet may incidentally function as an instrument of regression.

Finally, in Part IV, I develop a multi-pronged proposal for how the law can establish or encourage cyberproperty to protect society's access to the progressive benefits that property offers.

## I. THE INTERNET IS UNPROPERTIED

On October 27, 2022, Elon Musk purchased Twitter for \$44 billion.<sup>30</sup> 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 it to use the @X handle for official communications going

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<sup>30</sup> Kate Conger and Lauren Hirsch, *Elon Musk Completes \$44 Billion Deal to Own Twitter*, NEW YORK TIMES (Oct. 27, 2022), <https://www.nytimes.com/2022/10/27/technology/elon-musk-twitter-deal-complete.html>.

forward.<sup>31</sup> But there was a small problem. A user—one Gene X. Hwang—had already registered it years before.<sup>32</sup> 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 twelve years to market his social media business.<sup>33</sup> To (partially) compensate Vaught for his loss, X offered him the choice of @musiclover, @music123, or @musicmusic instead.<sup>34</sup> A kind gesture, to be sure, but each of these handles was already registered to someone else.<sup>35</sup> Honoring Vaught's selection from the menu before him, therefore, would have meant taking 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,<sup>36</sup> Replay Radio, and Gamefly shut down but who also saw their digital purchases go up in virtual smoke. 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.<sup>37</sup>

Yet, fair or not, each of the companies that relieved these parties of their online resources 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 include all usernames, “remain the exclusive property of [the company].”<sup>38</sup>

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<sup>31</sup> Sarah Perez, *Twitter, now X, took over the @x handle without warning or compensating its owner*, TECHCRUNCH (Jul. 26, 2023), <https://techcrunch.com/2023/07/26/twitter-now-x-took-over-the-x-handle-without-warning-or-compensating-its-owner/>.

<sup>32</sup> *Id.*

<sup>33</sup> 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>.

<sup>34</sup> *Id.*

<sup>35</sup> *Id.*

<sup>36</sup> 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> (explaining that while U.S. and U.K. consumers could transfer their purchased eBooks to Barnes & Noble's Nook platform, users in other countries lost access to their digital purchases).

<sup>37</sup> 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>.

<sup>38</sup> Twitter Terms of Service § 4, [https://twitter.com/en/tos/previous/version\\_13](https://twitter.com/en/tos/previous/version_13) (last visited Dec. 12, 2023).



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.<sup>39</sup> 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.<sup>40</sup> Put differently, users have no property rights in their accounts, their digital items, or even their own websites.

As noted in the Introduction, in claiming that the internet is unpropertied, I am not referring to property used to operate the internet (e.g., servers), to access the internet (e.g., smartphones), or even to property that can be found on the internet (e.g., text or files). 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, I am referring to “cyberproperty.”

In this Part, I unpack the nature of the unpropertied internet. But first, it’s important to understand why cyberproperty does not currently enjoy legal protection.

The internet, at root, is a service. And services generally do not give rise to property rights. If you hire a plumber to fix your sink, and he doesn’t complete the job, your only recourse is a claim for breach of contract. You certainly don’t own the plumber such that you could force him to do as he promised, and if comparable plumbers are available to do the work for the same fee, your expectation damages are likely to be zero. Property simply doesn’t figure into the equation.

The same is true of modern communication services, such as telephone and cable TV subscriptions, which are governed by contracts rather than deeds of conveyance. As a result, such service providers can reserve broad rights in their subscription contracts to change or cancel services without liability.<sup>41</sup> A subscriber enjoys no property right to her cable TV service and therefore cannot hold her provider liable for conversion if the service is canceled. Because internet resources—from internet access to streaming subscriptions to social media accounts—are service entitlements, it should not be surprising that users likewise enjoy no property rights to those resources.

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<sup>39</sup> Fictionwise Terms of Use, §§ 1, 9,

[https://web.archive.org/web/20110727080013/http://www.fictionwise.com/terms\\_of\\_use.htm](https://web.archive.org/web/20110727080013/http://www.fictionwise.com/terms_of_use.htm).

<sup>40</sup> See Nugent J. Nugent, *The Five Internet Rights*, 98 WASH. L. REV. 527, 580-87 (2023).

<sup>41</sup> See, e.g., Spectrum Residential General Terms and Conditions of Service § 17(c), <https://www.spectrum.com/policies/residential-general-terms-and-conditions-of-service> (permitting Spectrum, a provider of telephone and cable television services, to terminate services “for any reason” and disclaiming any liability to any subscriber for doing so).

But the service-property distinction, while explanatory, is not always dispositive, because the law sometimes elevates entitlements to property-like status. Most famously, in *Goldberg v. Kelly*, the Supreme Court held that a recipient of government benefits, such as welfare assistance, may not be deprived of those benefits without an evidentiary hearing that satisfies due process requirements.<sup>42</sup> In reaching that conclusion, the Court took note of Charles Reich's seminal article, *The New Property*, in which he argued that government benefits, from professional licenses to welfare grants, should be regarded as a new form of "property" and therefore protected by property rules.<sup>43</sup> Favorably citing Reich, the Court declared, "It may be realistic today to regard welfare entitlements as more like 'property' than a 'gratuity'."<sup>44</sup>

Franchise rights, though granted by contracts, have likewise received property-like treatment under the law.<sup>45</sup> In certain jurisdictions, they have served as collateral for loans, constituted estate assets within bankruptcy proceedings, or been subject to detailed financial disclosure requirements as investments. Priority review vouchers, which entitle pharmaceutical companies to expedite the FDA review process for new drugs, are treated as assets under the Hart-Scott-Rodino Act when sold between companies.<sup>46</sup> And even domain names, which *are* internet resources, are treated like property for the purpose of establishing *in rem* jurisdiction in cybersquatting cases.<sup>47</sup>

But these "property-like"—or perhaps "property-lite"—treatments of entitlements differ from traditional property in two important ways. First, whatever interests holders might possess in contract- or service-based entitlements, they certainly fall short of title. A welfare recipient might possess a strong enough interest in his benefits that the state could not rescind them without due process, but he does not *own* them. All things being equal, a state could retire a given benefit program altogether, thus terminating benefits for all recipients, without having to compensate erstwhile beneficiaries for their losses (or indeed without having to provide due process).<sup>48</sup> Whereas appropriating a private parcel would require the

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<sup>42</sup> See *Goldberg v. Kelly*, 397 U.S. 254, 264 (1970).

<sup>43</sup> See Charles A. Reich, *The New Property*, 73 YALE L.J. 733 (1964).

<sup>44</sup> 397 U.S., at n. 8.

<sup>45</sup> See *Monongahela Navigation Co. v. United States*, 148 U.S. 312 (1893).

<sup>46</sup> See, e.g., Press Release, *AstraZeneca agrees to buy US FDA Priority Review Voucher from Sobi* (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> (noting that AstraZeneca's purchase of an FDA Priority Review Voucher \$95 million is subject to clearance under Hart-Scott-Rodino).

<sup>47</sup> See 15 U.S.C. § 1125(d)(2)(A).

<sup>48</sup> For example, the welfare benefits at issue in *Goldberg*, which the Court held could not be revoked from a recipient absent due process, were later greatly curtailed for all recipients when Congress passed the Personal Responsibility and Work Opportunity Reconciliation Act of 1996. See Pub. L. 104-193, 110 Stat. 2105.

state to pay fair market value, the removal of a benefit is not a Taking under the Fifth Amendment.<sup>49</sup> Thus, providers can always turn off the spigot of entitlements that flow from their services without incurring liability under conversion or similar property-based torts.

Second, and related to the first, service providers enjoy *carte blanche* freedom to define the scope of entitlements they bestow. An entitlement to a resource provided through a service may indeed be a property interest, but if that service is governed by a contract—which is usually the case—the contract can define that interest in theoretically any manner. For example, a restaurant franchise license might specify that franchisees remain closed on Sundays. The FDA’s priority review voucher program requires voucher holders to exercise their rights within a certain time before those rights expire. And a domain name registrar can even forbid registrants from using their domain names to host websites that express certain viewpoints.<sup>50</sup>

While interests in traditional property can also come with strings attached, property law constrains just how innovative a grantor can be with those strings. Under the *numerus clausus* doctrine, the law recognizes only a limited or “closed number” of property forms.<sup>51</sup> Thus, if an owner wishes to give another person an interest in her parcel of land, she might choose between a grant of fee simple absolute, a defeasible fee simple, a life estate, an easement, or a lease, each of which offers a unique cocktail of rights and duties. Unlike the clever draftsman of a service contract, however, she may not write into the conveyance document whatever admixture of rights, duties, and conditions she can dream up.<sup>52</sup> She is constrained by the well-trodden paths before her and cannot invent new types of conveyances. These limitations protect holders of property interests from elaborate, unfair, or inconsistent terms that an unrestrained grantor might otherwise impose.<sup>53</sup>

A case study may help to illustrate these points. Domain names are mnemonic devices used to convert human-friendly alphanumeric strings (e.g., *cnn.com*) into computer-friendly IP addresses (e.g., 192.168.1.254).<sup>54</sup> One obtains a domain name from a registrar (e.g., GoDaddy) by paying a registration fee and agreeing to the registrar’s terms of service. Despite being a classic example of a contract- and service-based entitlement, domain

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<sup>49</sup> See *Bowen v. Gilliard*, 483 U.S. 587, 604 (“Congress is not, by virtue of having instituted a social welfare program, bound to continue it at all, much less at the same benefit level.”).

<sup>50</sup> See Nicholas J. Nugent, *Masters of Their Own Domains: Property Rights as a Bulwark Against DNS Censorship*, 19 *Colo. Tech. L. J.* 43, 73 (2021) [hereinafter, *Masters of Domains*].

<sup>51</sup> See Thomas W. Merrill & Henry E. Smith, *Optimal Standardization in the Law of Property: The Numerus Clausus Principle*, 110 *YALE L.J.* 1, 3 (2000).

<sup>52</sup> *Id.*

<sup>53</sup> *Id.* at 24-27 (justifying the doctrine, in part, on the need to reduce information costs).

<sup>54</sup> For a primer on the domain name system, see Nugent, *Masters of Domains*, *supra* note \_\_\_, at 49-56.

names received property-like treatment in the Ninth Circuit's *Kremen v. Cohen* decision.<sup>55</sup> In that case, Kremen, the holder of sex.com won a \$65 million verdict against Network Solutions, the issuing registrar, for conversion after the registrar was hoodwinked by a fraudster into transferring the domain name to another party without Kremen's permission.<sup>56</sup> In upholding the verdict, the Ninth Circuit reasoned that because a domain name was an interest capable of precise definition and exclusive control, it therefore constituted intangible personal property and could be the subject of a conversion claim.<sup>57</sup>

While that result, and others like it, would seem to vindicate the assertion that online service-based resources can constitute property, the reality is less sanguine. Crucial to the outcome was the fact that no contract existed between the domain holder and the registrar.<sup>58</sup> Without terms and conditions cabinining Kremen's rights and limiting the registrar's liability, the court had little choice but to treat the domain name like any other property interest and hold Network Solutions strictly liable for converting it.

But since that time, Network Solutions, and indeed all other registrars, have introduced lengthy registration agreements that limit their liability and give themselves broad powers over registered domain names. For example, it is common today for registrars to reserve the right to revoke domain registrations for various reasons or for no reason.<sup>59</sup> Some even require holders to agree that domain names are "not property" or that holders acquire no property rights in them.<sup>60</sup> Kremen might have won himself a \$65 million victory for the loss of his valuable domain name in 2003. But Network Solutions could easily change its terms such that another registrant deprived of an equally valuable domain name would be out of luck for the identical behavior in 2004. And no law would prevent the Internet Corporation for Assigned Names and Numbers (ICANN) from retiring the *entire*.com space in the future, depriving all .com domain holders of their valuable property without compensation.

Thus, it is all well and good to say that online services can give rise to "property interests." But such interests amount to little if service providers can give themselves unlimited power to take back those interests or define them away.

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<sup>55</sup> See *Kremen v. Cohen*, 337 F.3d 1024, 1035 (9th Cir. 2003).

<sup>56</sup> *Id.* at 1026-27.

<sup>57</sup> *Id.* at 1029-30.

<sup>58</sup> *Id.* at 1028.

<sup>59</sup> See, e.g., GoDaddy - Domain Name Registration Agreement (Dec. 4, 2023).

<sup>60</sup> See, e.g., CIRA Registrant Agreement, § 3.2 (Apr. 1, 2022), <https://cira.ca/registrant-agreement> ("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.")

In sum, the absence of property in cyberspace stems from two distinct phenomena: the fact that property does not naturally flow from services and the fact that the law has not stepped in to create property interests in the internet's service entitlements that have any power beyond how service providers contractually define them.

With this background established, I'll now unpack the unpropertied nature of the internet by making reference to three distinct categories of cyberproperty: digital identity, digital chattels, and digital realty. Each of these categories roughly aligns with a different branch of property in the offline world. Although drawing such distinctions helps to highlight discrete legal issues, these categories are not canonical. Other taxonomies are possible.

Moreover, in providing the below examples, I do not mean to imply that property rights *should* inhere in every online resource or that I would reverse the result in each of these anecdotes. Rather, I offer the following descriptive account merely to elucidate the unpropertied nature of the internet, without necessarily making any value judgments. In the parts that follow, I will analyze the philosophical and societal implications of this nature in more detail before suggesting changes to how the law should treat online services and resources.

#### A. *Digital Identity*

Digital identity, as I define it, consists of those resources that define and are central to an online identity or persona. Typically, such a persona is anchored to an online account and is uniquely identified by an alias (alternatively called a username or handle) within a website or online service. Yet, an online persona goes beyond merely having an account. In modern web applications, an account serves not only as a vehicle for acquiring a reputation, building relationships, and gaining influence but also as a *container* for the quanta of one's progress on those fronts. Sometimes that progress manifests itself in discrete metrics like follower counts, reputation points, engagement rates, or even internal flags that a service should amplify speech by a particular user over that of other users. In other cases, a user's online reputation exists solely, albeit meaningfully, in the minds of other users, similar to the intangible goodwill that inheres in trademarks.

In more advanced systems, an online persona may be instantiated as an avatar—a visual representation of the user, whether similar to the user's real-life appearance or wholly concocted. For example, in Second Life, a popular online virtual world, users may customize countless aspects of their avatar's appearance, from body shape to hairstyle to designer virtual

clothing,<sup>61</sup> often spending thousands of dollars on the platform to do so.<sup>62</sup> Modern metaverse platforms go a step further by making it possible to create nearly indistinguishable representations of users, from faces to voices, even to unique physical quirks and mannerisms.<sup>63</sup> It is for this reason that users who invest significant time and money into their avatars often refer to them as their “digital twins.”<sup>64</sup>

Yet neither aliases nor avatars enjoy any legal protections beyond what service providers choose to extend in their terms of service. As noted, the X social media platform reserves the right to revoke any user’s alias without compensation. Instagram<sup>65</sup> and Twitch,<sup>66</sup> for example, reserve similar rights. And countless other websites state quite clearly that they may terminate a user’s account at any time,<sup>67</sup> a right that necessarily entails the power to destroy the user’s online persona.

To be sure, in some circumstances, a user deprived of her alias might bring valid claims against another person, including the service provider, for *using* that alias. If her alias contains part of her real name or her trademark, or her avatar captures her likeness, another person’s use of those resources might give rise to claims for trademark infringement, defamation, fraud, or violation of publicity rights. But such claims are generally unavailable when a user loses what is merely a treasured username or avatar—such as @X or @music—rather than one that includes her name, trademark, or likeness. And, importantly, such claims would protect a user only if the provider permits another person to *take over* her online identity. The deprived user would almost certainly be powerless to stop a provider from simply revoking her digital identity and permanently consigning it to the digital dustbin.

Put differently, users have no property interests in their digital identities. They can be swiftly un-personed by service providers, irrespective of how much time or money they invest into their online

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<sup>61</sup> See Jeremy Linden, *Controlling your avatar's appearance*, SECOND LIFE, <https://community.secondlife.com/knowledgebase/english/controlling-your-avatars-appearance-r216/>.

<sup>62</sup> See Wagner James Au, *There Will Never Be Another Second Life*, THE ATLANTIC (Jun. 26, 2023), <https://www.theatlantic.com/technology/archive/2023/06/second-life-virtual-reality-platform-longevity/674533/>.

<sup>63</sup> See Ochanji, *supra* note \_\_.

<sup>64</sup> See Basil Trunov, *Hyper-realistic avatars, digital twins and the art of bringing ancestors back to life in VR/AR*, VARJO (Jun. 8, 2023), <https://www.linkedin.com/pulse/hyper-realistic-avatars-digital-twins-art-bringing-ancestors-back>.

<sup>65</sup> Instagram Terms of Use, <https://help.instagram.com/581066165581870>.

<sup>66</sup> Twitch Username Policy, [https://safety.twitch.tv/s/article/Usernames?language=en\\_US](https://safety.twitch.tv/s/article/Usernames?language=en_US).

<sup>67</sup> See, e.g., Reddit User Agreement, § 17 (Sep. 25, 2023), <https://www.redditinc.com/policies/user-agreement-september-25-2023> (“[W]e may suspend or terminate your Account, moderator status, or ability to access or use the Services at any time for any or no reason.”).

personas or how central those personas are to their identities, influence, or financial interests.

### *B. Digital Chattels*

A second category of cyberproperty—digital chattels—comprises the kinds of online resources users acquire and use on third-party websites or services but that are not necessarily tied to users’ digital identities.

For example, Upwork, a website that connects freelancers to potential clients, offers a system of tokens called “connects” to regulate user privileges.<sup>68</sup> Freelancers may use connects to bid on jobs, to promote their profiles, or to indicate their availability.<sup>69</sup> Users on dating sites like Tinder and Bumble may likewise deploy “boosts”<sup>70</sup> or “Bumble coins,”<sup>71</sup> respectively, to amplify their personal ads over those of other users. And the Brave browser project has developed a blockchain-based system of “Brave Attention Tokens” that advertisers can pay both websites (to display their ads) and users (to view them), disintermediating centralized ad brokers like Google and Meta.<sup>72</sup>

How users acquire these assets varies by site. In some cases, users obtain in-site resources only through “sweat equity”—their active participation or labor within the site. For example, on Stack Overflow, a popular online forum used by programmers to get answers to technical questions, users accumulate points when they respond to others’ questions and when other users upvote their answers.<sup>73</sup> Users can then use those points as “bounties” to incentivize others to answer their own questions.<sup>74</sup> Users can thus earn points either from the system or by winning other users’ bounties. But they cannot purchase points.<sup>75</sup>

Other sites permit—indeed encourage—users to purchase supplemental entitlements or tokens using their credit cards. Online games such as

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<sup>68</sup> Upwork, *Understanding and Using Connects*, <https://support.upwork.com/hc/en-us/articles/211062898-Understanding-and-Using-Connects>.

<sup>69</sup> *Id.*

<sup>70</sup> Tinder, *What is Boost?*, <https://www.help.tinder.com/hc/en-us/articles/115004506186-Boost>.

<sup>71</sup> 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>.

<sup>72</sup> Brave, *BAT - Making Crypto and DeFi accessible and useable for everyone*, <https://basicattentiontoken.org/>.

<sup>73</sup> Stack Overflow, *What is reputation? How do I earn (and lose) it?*, <https://stackoverflow.com/help/whats-reputation>.

<sup>74</sup> Stack Overflow, *What is a bounty? How can I start one?*, <https://stackoverflow.com/help/bounty>. They also serve as reputation metrics, which entitle high-reputation users to exercise certain privileges, such as the ability to edit posts, access deleted questions, and serve as site moderators. In that sense, they also function as components of digital personhood.

<sup>75</sup> Stack Exchange, *Buying reputation points*, <https://meta.superuser.com/questions/2237/buying-reputation-points>.

Fortnite (“V-bucks”) and Roblox (“Robucks”) generate considerable revenue when users buy in-game resources for their characters. Social media sites like TikTok and YouTube likewise allow users to buy “coins” and “super stickers,” respectively, to shower their favorite creators with rewards. Still other sites like Second Life facilitate vast internal economies in which users can “manufacture” digital goods, operate their own in-app stores, and sell, lease, or sublease digital spaces.

The property status of these kinds of digital chattels is more developed than that of digital identities, but only slightly. In the case of digital goods acquired through sweat equity, users enjoy little to no security in their virtual possessions. Terms of service often disclaim any obligation to compensate a user for his in-site goods if his account is terminated. Certain entitlements, such as Upwork connects, are forfeited each month if not used, even if purchased with real money. 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 contract change.

Even resources that are closely analogous to traditional forms of personal property, such as digital books, music, and movies—although they technically do not fall within the definition of “cyberproperty”—suffer from this impermanence. Amazon, as the world’s largest seller of digital movies and eBooks, informs users that once their accounts are closed (irrespective of whether that closure is performed by the user or by Amazon), the user loses access to all digital content he purchased and accessed through Amazon, no matter how much money spent to acquire it.<sup>76</sup>

When users die, service providers routinely refuse to grant their heirs access to their accounts or any resources therein, creating frequent legal clashes between family members and service providers over the issue of “digital death.”<sup>77</sup> Examples include Facebook’s refusal to permit parents to access the account of their deceased 15-year-old daughter to understand the reason for her suicide<sup>78</sup> and Apple’s four-year legal battle to prevent a widow from receiving family photos and videos stored in her late husband’s account.<sup>79</sup> 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 complicated legal battles over the status of digital estates.

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<sup>76</sup> Amazon, *What Happens When I Close My Account?*,

<https://www.amazon.com/gp/help/customer/display.html?nodeId=GBDB29JHRPFBVDVYV>

<sup>77</sup> See Edina Harbinja, *DIGITAL DEATH, DIGITAL ASSETS, AND POST-MORTEM PRIVACY* (2023).

<sup>78</sup> See *Facebook ruling: German court grants parents rights to dead daughter's account*, BBC NEWS (Jul. 12, 2018), <https://www.bbc.com/news/world-europe-44804599>.

<sup>79</sup> See Mark Bridge, *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>.



Returning to the issue of stability, service providers need to be able to terminate accounts for various legitimate reasons, and they have limited options for preserving terminated users' digital chattels. After all, an Upwork connect has utility only within Upwork's platform, and preserving that resource for a terminated user would require Upwork to continue to allow him to access its services, defeating the whole point of termination. And while Amazon could theoretically get around this problem by allowing users to download their purchased eBooks, music, and movies to be consumed entirely outside of Amazon's apps and services, doing so would release valuable intellectual property into the wild, increasing the risk of mass infringement.<sup>80</sup>

But there are other ways to preserve the value of digital chattels without continuing to provide services to exiled users. For resources that are unique to particular platforms (Bumble coins or Robucks, for instance), providers could allow users to cash out their lost goods, especially where users acquired those goods by paying real money. For resources that could easily be used on other platforms—e.g., digital books, music, and movies—providers could provide options for transferring those resources elsewhere, much like how online brokerages permit customers to transfer securities in kind to other brokerages. Yet providers routinely refuse to grant users any refunds for their unused entitlements, including in situations where providers *cause* users to lose those entitlements by terminating their accounts. 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.

Even when users' accounts remain active and they retain access to their digital chattels, they enjoy far fewer rights in those chattels than they would in offline goods. To start, it is well established that property owners generally can dispose of their personal property as they please. A consumer who buys a physical book can read it as often as she pleases, give or lend it to a neighbor, or even burn it (although hopefully not). The law disfavors restraints on alienation, and terms that restrict buyers from further transferring their acquired property are likely to be unenforceable. A savvy seller could try to get around that limitation by recasting a sale as something other than the title-conveyance of personal property, but the *numerus clausus* doctrine would prevent the seller from drafting a new category of property into existence. Nor does it matter that an author may hold a copyright in the content of the book. Under the first sale doctrine, a copyright holder's rights to his intellectual property are exhausted upon the first authorized sale of a physical good incorporating that intellectual

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<sup>80</sup> No doubt, Amazon's contracts with third-party content owners also prevent Amazon from doing so.

property. Provided that no one reproduces the book, it can change hands (as can money for its resale) without limit.

Yet, because digital chattels are not in fact chattels, but are mere service entitlements, online service providers are not bound by the law's presumption against alienation. They can, and do, prevent users from transferring, selling, or sharing their online resources. And because the "transfer" of digital media inevitably involves copying, those who purchase digital media cannot avail themselves of the first sale doctrine to resell their entitlements without permission.<sup>81</sup> Online service providers also don't have to reckon with *numerus clausus* and can be as inventive as they like when it comes to micromanaging how consumers use their products. Whether through contract terms or software controls, a provider could allow a customer to listen to a "purchased" song only 50 times before it goes away, could revoke a domain name if the holder expresses certain viewpoints, or could lock or unlock features depending on the daily alignment of the planets. Because contract rules, rather than property rules, govern such goods, courts will not second-guess even the quirkiest restrictions, so long as they do not rise to the high level of unconscionability.

Even when consumers purchase "perpetual" entitlements to online goods, they might still lack stability in those goods. In recent years, publishers have revised older books, such as those of Agatha Christie, Roald Dahl, and Ian Fleming, to remove outdated or offensive terms or to otherwise bring them in line with modern sensibilities.<sup>82</sup> While the wisdom of bowdlerizing classic works could be debated, it spurred even greater outrage when Amazon silently updated customers' already-purchased eBooks to reflect the newer text.<sup>83</sup> Like other online service providers, Amazon reserves broad rights to alter the nature of customers' already-purchased entitlements.<sup>84</sup>

This instability stands in marked contrast to the sanctity of physical goods. To borrow a dark analogy from Aaron Perzanowski and Chris Jay Hoofnagle, in the offline space, this kind of post-sale control would be comparable to permitting Amazon to dispatch a drone to your home to silently retrieve a previously purchased physical book and replace it with an

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<sup>81</sup> Even when transfers have not involved copying, such as in the case of transferring original CDs or diskettes, courts have allowed software vendors to override customers' transfer rights in their end user license agreements.

<sup>82</sup> 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. 3, 2023), <https://www.nytimes.com/2023/04/03/books/classic-novels-revisions-agatha-christie-roald-dahl.html>.

<sup>83</sup> See Ben Ellery & James Beal, *Roald Dahl ebooks 'force censored versions on readers' despite backlash*, THE TIMES (Feb. 25, 2023), <https://www.thetimes.co.uk/article/roald-dahl-collection-books-changes-text-puffin-uk-2023-rm12622v10>.

<sup>84</sup> See Reggie Ugwu, *It's Their Content, You're Just Licensing it*, N.Y. TIMES (Apr. 4, 2023), <https://www.nytimes.com/2023/04/04/arts/dahl-christie-stine-kindle-edited.html>.

updated version or a cash refund.<sup>85</sup> Obviously, the law would not countenance any such right to revoke or change an already consummated sale of a tangible item. Yet, in contrast to the kinds of post-transaction control that can be exerted over property, the contractual rights a service provider can reserve to itself know few bounds.

### C. *Digital Realty*

As explained above, digital identities and digital chattels are typically tied to specific websites or online services. A Reddit username has meaning only on Reddit, and a Tinder boost can only get you a Tinder date. Because third-party providers, rather than users, control the spaces in which their resources are operationalized, users will always be at the whim of those providers to continue to enjoy their resources.

A seemingly obvious solution to this problem, therefore, would be to establish one's own online space. If a disgruntled user objects to the impermanence of her identity or the restrictions placed on her chattels, she can simply create her *own* website or service and then instantiate the resources she wants within it. She can then "own" her resources in perpetuity, perhaps even grant similarly generous rights to other users of her service.

I call this third category of cyberproperty, in which a person may own her own online service, "digital realty." Think of it as a *container* for digital identity and digital chattels or as an incubator in which those other forms of cyberproperty are created and on which they depend to survive. Because the definition of digital realty turns on controlling the very space in which digital identities and digital chattels are created and administered, it is therefore distinct from other resources that might merely be styled as digital "spaces" or even virtual "real estate." For example, Shopify enables customers to establish online "stores" for which they can control the inventory, content, and even the look and feel of the place. Reddit permits users to create subreddits in which they can set their own terms of use. And Second Life users can buy and sell "land," such as digital "homes" and "islands." These resources have the flavor of realty, to be sure. But because third-party providers, rather than users, ultimately control these online spaces, they are more appropriately regarded as sophisticated forms of digital chattels.

In the offline world, realty plays an important role in protecting both chattels and identity. Most obviously, a person can place her chattels on her

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<sup>85</sup> Aaron Perzanowski & Chris Jay Hoofnagle, *What We Buy When We Buy Now*, 165 U. PENN. L. REV. 315, 316-17 (2017).

own land to protect them from others, even from the hand of the repossessor who might otherwise have a valid claim to collateral located on the property. Renters who object to periodic intrusions by their landlords or to restrictions on what they can do on rented property can, if they're able, buy their own homes, in which they can engage in any lawful activity they like. And persecuted or marginalized groups have a long history of pilgriming to their own lands, on which they can grow and manufacture their own goods and exercise the freedoms previously denied to them. In many ways, creating one's own website or online service functions similarly, providing a land-like bulwark against the power and whims of others.

Yet the similarities between digital and physical realty go only so far. All things being equal, private parties can never take away physical land. But digital land inexorably depends on the cooperation of other private actors. For example, to operate her own website, our beleaguered user must register a domain name, must procure internet access and web hosting services, must have exclusive rights to one or more IP addresses, and must trust network operators to faithfully route her packets and not block their subscribers from accessing her site. Each of these resources depends on the continued provision of services from private operators.

And just as X is not required to preserve your alias or Amazon to protect your purchased movies, the entities that make websites possible are not required to enable yours. As I've detailed in other work, domain intermediaries are increasingly suspending or revoking domain names associated with lawfully operated websites whose content they dislike. Cloud computing companies reserve broad rights to determine which websites they will host. Network operators have refused to provide internet service for, route packets on behalf of, or enable their users to access controversial sites. And even IP addresses have become a front in the battle to control which people or groups are allowed to maintain publicly accessible websites. Because no laws obligate such intermediaries to operate the internet's core services for the benefit of all, it is no exaggeration to say that no website has the legal right to exist.<sup>86</sup>

This fact, perhaps more than any other, illustrates the unpropertied nature of the internet. Not only can a user have no guarantee that any digital identity or chattels she possesses today will remain hers tomorrow, but she cannot rest secure in the assurance that she can build her own online space if no one else will have her. Like a homeless person, she can not only be booted from others' private spaces, but she can be denied a place of her own. Nor, because cyberspace lacks public places, can she simply abscond

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<sup>86</sup> While some core intermediaries may currently operate with neutrality and some of their terms might promise it, nothing requires them to maintain that neutrality or prevents them from changing their terms.

to the equivalent of the nearest park or sidewalk. Without cyberproperty, she can be forced to die a digital death.

## II. 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 of property, for example, views property, especially when it comes to private ownership of the means of production, as a tool of exploitation.<sup>87</sup> By this account, the capitalist class uses property ownership to control resources and labor, creating an unequal society in which wealth is concentrated in the hands of a few.<sup>88</sup> Others, approaching the issue from an environmental perspective, have argued that property leads to the exploitation of natural resources without regard to environmental impact.<sup>89</sup> And some feminists criticize property on the grounds that it has been used primarily to perpetuate gender inequality.<sup>90</sup> According to some of these accounts, property has *always* been a mistake. Moving away from it, 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.<sup>91</sup> For them, property represents not an intrinsic evil but an increasingly archaic device for ordering society.<sup>92</sup> 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.<sup>93</sup> Newer, more efficient systems for optimizing welfare have been

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<sup>87</sup> See Marx & Engels, *supra* note \_\_ (“[M]odern bourgeois private property is the final and most complete expression of the system of producing and appropriating products, that is based on class antagonisms, on the exploitation of the many by the few.”).

<sup>88</sup> *Id.*

<sup>89</sup> See, e.g., Vandana Shiva, *RECLAIMING THE COMMONS* (2020); Murray Bookchin, *THE ECOLOGY OF FREEDOM: THE EMERGENCE AND DISSOLUTION OF HIERARCHY* (1982).

<sup>90</sup> 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. Benn and G. Gaus eds.) (1983).

<sup>91</sup> Cf. James W. Ely, Jr., *Property Rights and Liberty: Allies or Enemies?*, 22 *Presidential Studies Quarterly* 703, 704.

<sup>92</sup> 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 (1977).

<sup>93</sup> See Ely, *supra* note \_\_ (“[M]any scholars and jurists currently treat property rights as little more than an awkward relic of the 18th century”).

made possible by technological advances, and we would be wise to upgrade our societal software accordingly.

Thus, before we can evaluate whether an unpropriated internet is a cause for concern, we first need to understand the normative case for property. I'll state upfront 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.<sup>94</sup>

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 critiques.

### A. *Property Against Progress*

#### 1. *Advancing Knowledge*

*Information wants to be free.*

– Stewart Brand<sup>95</sup>

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.<sup>96</sup> 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

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<sup>94</sup> See, e.g., Martha Nussbaum, *WOMEN AND HUMAN DEVELOPMENT* (2001) (emphasizing the importance of property ownership to advance women's equality); Jeremy Waldron, *THE RIGHT TO PRIVATE PROPERTY* (1990) (making the economic case); Julian Simon, *THE ULTIMATE RESOURCE* (1981) (responding to the environmental critique).

<sup>95</sup> Comments During the First Hackers' Conference (1984). See Steven Levy, "*Hackers*" and "*Information Wants to Be Free*," *BACKCHANNEL* (Nov. 21, 2014), <https://medium.com/backchannel/the-definitive-story-of-information-wants-to-be-free-a8d95427641c#.y7d0amvr3> (providing the history of Brand's famous quote).

<sup>96</sup> See James Boyle, *THE PUBLIC DOMAIN: ENCLOSING THE COMMONS OF THE MIND* 60-61 (2008).

users to electronically access the same resources on demand and then providing the means for those 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,<sup>97</sup> or awkwardly tried to force old business models onto the new internet, such as by offering only paid encyclopedia subscriptions.<sup>98</sup> Frustrated by the old guard's refusal to adapt, users took matters into their own hands by making and distributing unauthorized copies of content through file-sharing services like Napster and LimeWire.<sup>99</sup> 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.<sup>100</sup> 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.<sup>101</sup>

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-properization of those resources unnecessarily stifles the generative nature of the internet.<sup>102</sup> 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<sup>103</sup>—the Digital Commons movement developed useful new sharing mechanisms, such as the Creative Commons license.<sup>104</sup> That license, in turn, permits the public to freely share the content of more than 50 million pages on Wikipedia, one of the largest public repositories of information in the world.<sup>105</sup> The Digital Commons movement has also played a key role in the development of open-source software licenses that

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<sup>97</sup> See Amy Harmon, *Grudgingly, Music Labels Sell Their Songs Online*, N.Y. TIMES (Jul. 1, 2002), <https://www.nytimes.com/2002/07/01/business/technology-grudgingly-music-labels-sell-their-songs-online.html>.

<sup>98</sup> 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/>.

<sup>99</sup> See Jack Goldsmith & Tim Wu, WHO CONTROLS THE INTERNET? (2007).

<sup>100</sup> See Electronic Frontier Foundation, *RIAA v. The People: Five Years Later* (Sep. 30, 2008), <https://www.eff.org/wp/riaa-v-people-five-years-later>.

<sup>101</sup> See Edward W. Felten, *A skeptical view of DRM and fair use*, 46 COMMS. ACM 56–592 (2003).

<sup>102</sup> See Mélanie Dulong de Rosnay & Felix Stalder, *Digital commons*, 9 INTERNET POLICY REVIEW 4 (2020), <https://www.econstor.eu/bitstream/10419/233108/1/1755140037.pdf> (chronicling the history of the Digital Commons movement). See also Eben Moglen, *The dotCommunist Manifesto* (Jan. 2003), <https://moglen.law.columbia.edu/publications/dcm.html>.

<sup>103</sup> Jeremy Waldron, *Homelessness and the Issue of Freedom*, 2019 J. CONST. L. 27, 49 (2019).

<sup>104</sup> *Id.*

<sup>105</sup> *Id.*

make software projects and their source code freely available to those who wish to use them or learn from them.<sup>106</sup> And the Linux the operating system, which powers more than 96.3 percent of the top one million web servers on the internet,<sup>107</sup> 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."<sup>108</sup> 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."<sup>109</sup>

Yet the commitments of the Digital Commons movement, many of which I agree with, are not inconsistent with this article's thesis. For one, as evidenced by the Lessig and Stallman quotes above, that movement is primarily concerned with *intellectual* property rather than cyberproperty. As explained, cyberproperty includes only those kinds of resources and spaces that are both unique to the internet and that define the internet—things like aliases, webpages, domain names, and site-specific entitlements. While traditional forms of intellectual property, such as books, music, and software, can obviously be found on the internet, they are not unique to it. In their case, the internet functions merely as a distribution mechanism, which is why they existed, even in digital form, long before the modern internet was born.

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.<sup>110</sup> 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

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<sup>106</sup> *Id.*

<sup>107</sup> 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/>.

<sup>108</sup> Lawrence Lessig, *FREE CULTURE* 6 (2004).

<sup>109</sup> Richard Stallman, *The GNU Manifesto* (1985), <https://www.gnu.org/gnu/manifesto.en.html>.

<sup>110</sup> See LESSIG, at 113 ("It is not just that there are a few powerful companies that control an ever expanding slice of the media. It is that this concentration can call upon an equally bloated range of rights—property rights of a historically extreme form—that makes their bigness bad."). In fact, Lessig takes pains to explain that he does not object to property itself or even to intellectual property: "A free culture is not a culture without property; it is not a culture in which artists don't get paid. A culture without property, or in which creators can't get paid, is anarchy, not freedom. Anarchy is not what I advance here." *Id.* at 6.



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<sup>111</sup>

These words, which form the title of a provocative 2016 essay published by the World Economic Forum, typify another 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."<sup>112</sup> Instead, "[e]verything [we] considered a product, has now become a service."<sup>113</sup> But this new system, Auken assured, 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.<sup>114</sup>

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,

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<sup>111</sup> Ida Auken, *Welcome to 2030: I Own Nothing, Have No Privacy, And Life Has Never Been Better*, WORLD ECONOMIC 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>.

<sup>112</sup> *Id.*

<sup>113</sup> *Id.*

<sup>114</sup> *Id.*

but the cost savings from that diminished production could be used instead 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.<sup>115</sup> 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 of participants. Already, we see the success of house-sharing platforms like Airbnb and on-demand car services like Getaround.<sup>116</sup> 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 property. 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.

#### *1. Personhood*

*[E]very Man has a Property in his own Person.*

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<sup>115</sup> 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>.

<sup>116</sup> *Id.*

—John Locke<sup>117</sup>

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

It is true in the way Mary 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.”<sup>118</sup> For example, as Radin explained, a person might have deep, personal connection to certain objects, such as a wedding ring or family heirloom.<sup>119</sup> To deny that person the ability to permanently own such objects—to insist that any possession is revocable or replaceable—is to deny her the right to be fully a person.<sup>120</sup>

But it is also true in another, deeper sense. Philosophers have long posited that humans possess a property interest in their own persons.<sup>121</sup> 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.<sup>122</sup> 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 the fruit of his labor, his identity, and the children issued from his body.<sup>123</sup>

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.<sup>124</sup> 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.<sup>125</sup> 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.<sup>126</sup> It should therefore be easy to see how coverture dehumanized women, as their persons (both their bodies and their identities) were taken from them 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.

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<sup>117</sup> John Locke, TWO TREATISES OF GOVERNMENT § 27 (1689).

<sup>118</sup> Radin, *supra* note \_\_ at 957 (emphasis in original).

<sup>119</sup> *Id.* at 959-61.

<sup>120</sup> *Id.*

<sup>121</sup> See, e.g., Robert Nozick, ANARCHY, STATE AND UTOPIA (1974); LOCKE, *supra* note \_\_.

<sup>122</sup> See Eric Mack, *Self-Ownership and the Right of Property*, 73 THE MONIST No. 4 (Oct. 1990).

<sup>123</sup> See sources cited in note 6.

<sup>124</sup> See Carole Pateman, *Self-Ownership and Property in the Person: Democratization and a Tale of Two Concepts*, 10 J. POL. PHIL. 1, 23 (2002).

<sup>125</sup> *Id.*

<sup>126</sup> *Id.*

## 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<sup>127</sup>

The framers saw property rights as essential to securing individual liberty,<sup>128</sup> a view that held sway long after their passing.<sup>129</sup> Evidence for this assertion is not hard to deduce. Property provides a zone of autonomy against both the state and other private parties.<sup>130</sup> Subject to obvious limitations like criminal laws, nuisance, and covenantal restrictions, a person who owns his house and land may generally act as he pleases on his property. 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,<sup>131</sup> lessors can do just that. Thus, a dealership that sells a car to a consumer cannot require the buyer to obtain 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, vehicles may control the lessee's behavior in these and many other ways.

## 3. *Privacy*

*Once in a while I get annoyed about the fact that I have no real privacy. Nowhere 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.*

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<sup>127</sup> Arthur Lee, AN APPEAL TO THE JUSTICE AND INTERESTS OF THE PEOPLE OF GREAT BRITAIN, IN THE PRESENT DISPUTE WITH AMERICA 14 (1775).

<sup>128</sup> Ely, *supra* note \_\_, at 705 (“James Madison, the principal drafter of the Bill of Rights, ... stressed private property as essential ... to the stability ... and the enjoyment of individual liberties.”).

<sup>129</sup> *Id.* at 703 (“[T]hroughout much of American history property rights and liberty interest were closely tied in both political and legal thought.”).

<sup>130</sup> *Id.* (“Protection of property rights served to create a realm of individual autonomy and thus protect citizens from potentially coercive government.”).

<sup>131</sup> Perzanowski & Schultz, *supra* note \_\_, at 16-17.

— Ida Auken<sup>132</sup>

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 to ensure that the tenant is complying with the terms of the lease.<sup>133</sup> By contrast, a person who owns his dwelling can generally live as a recluse, strictly limiting any private party's ability to enter his property without permission. He also enjoys greater protection from the prying eyes of the state. Although the Supreme Court has held that a landlord generally cannot consent on behalf of a tenant to search the tenant's premises,<sup>134</sup> 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.<sup>135</sup>

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.<sup>136</sup>

#### 4. *Free Expression*

*Speech requires space.*

— Derek Bambauer<sup>137</sup>

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.<sup>138</sup> Or, having learned his lesson, Max Yasgur might refuse to rent

<sup>132</sup> Auken, *supra* note \_\_.

<sup>133</sup> See Uniform Residential Landlord Tenant Act, § 701(b).

<sup>134</sup> See *Stoner v. California*, 376 U.S. 483 (1964) (excluding evidence from a hotel room search consented to by a hotel employee); *Chapman v. United States*, 365 U.S. 610 (1961) (excluding evidence from search consented to by a landlord).

<sup>135</sup> See, e.g., *State v. Koop*, 314 N.W.2d 384, 387 (Iowa 1982).

<sup>136</sup> See Waldron, *supra* note \_\_ at 48 (describing privacy deprivations endured by homeless persons who dwell in common areas).

<sup>137</sup> Derek Bambauer, *Orwell's Armchair*, 79 U. CHI. L. REV. 863, 910 (2012).

<sup>138</sup> Although under *Prune Yard Shopping Ctr. v. Robins*, 447 U.S. 74 (1980), and *Rumsfeld v. Forum for Academic and Institutional Rights*, 547 U.S. 47 (2006), it might be constitutional for the state to prevent a convention center from discriminating against event organizers based on ideology.

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.<sup>139</sup> Prior to *Hague*, the First Amendment had not been interpreted to require the state to permit free speech on any state-owned property.<sup>140</sup> The Court had 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.<sup>141</sup> In reversing prior holdings to that effect, the *Hague* Court reasoned that “[w]herever 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.”<sup>142</sup> 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) repurpose a statement by Mark Lemley, “Public spaces sometimes provide a subsidy to the poor.”<sup>143</sup> 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

<sup>139</sup> 307 U.S. 496 (1939).

<sup>140</sup> See *Davis v. Massachusetts*, 167 U.S. 43 (1897).

<sup>141</sup> *Id.*

<sup>142</sup> 307 U.S., at 515.

<sup>143</sup> Mark A. Lemley, *Place and Cyberspace*, 91 CALIF. L. REV. 521, 533 (2003).

racial or religious minorities to be shut out of neighborhoods, country clubs, and even universities.<sup>144</sup> 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.<sup>145</sup> 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.<sup>146</sup>

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 establishing their own self-supporting communities.<sup>147</sup> 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.<sup>148</sup> 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.<sup>149</sup> 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

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<sup>144</sup> See, e.g., Leslie M. Harris, *The Long, Ugly History of Racism at American Universities*, THE NEW REPUBLIC (March 26, 2015), <https://newrepublic.com/article/121382/forgotten-racist-past-american-universities>.

<sup>145</sup> See Center for American Progress, *The United States' History of Segregated Housing Continues to Limit Affordable Housing* (Dec. 15, 2016), <https://www.americanprogress.org/article/the-united-states-history-of-segregated-housing-continues-to-limit-affordable-housing/>.

<sup>146</sup> See Richard R. B. Powell, *The Relationship between Property Rights and Civil Rights*, 15 HASTINGS L.J. 135 (1963) (chronicling multiple instances in which fair housing laws were opposed on the ground that they “unlawfully destroyed” the “property rights’ of landowners”).

<sup>147</sup> See e.g., HANNIBAL B. JOHNSON, *BLACK WALL STREET: FROM RIOT TO RENAISSANCE IN TULSA'S HISTORIC GREENWOOD DISTRICT* (2021) (describing various self-supporting African American settlements in between 1865 and 1920); MARK S. FERRARA, *AMERICAN COMMUNITY: RADICAL EXPERIMENTS IN INTENTIONAL LIVING* (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 History* 67 (1986) (describing the “Hebrew free loan societies” that enabled Jewish residents to obtain otherwise unavailable capital to start businesses)

<sup>148</sup> This, of course, assumes that persecuted groups have the equal right to buy property. Thus, laws prohibiting discrimination in the sale of one's property (obviously a curtailment of the seller's property rights) are important for ensuring that buyers have the equal opportunity to establish their own property ownership and enjoy the benefits that flow from it.

<sup>149</sup> See Paul Johnson, *A HISTORY OF THE AMERICAN PEOPLE* 37-46 (1999) (describing how the America's vast size made it nearly impossible for authorities to stamp out heterodoxy because dissidents could simply establish new colonies elsewhere).

storefronts in the bustling, black-owned district in Tulsa that came to be known as “Black Wall Street.”<sup>150</sup>

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 when the group becomes too unpopular. Without property, an unpopular group runs the risk of being permanently marginalized.<sup>151</sup> Responding to the feminist critique, 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.<sup>152</sup> 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.”<sup>153</sup>

## 6. *Wealth*

*[P]olicies that successfully address disparities in homeownership rates and returns to income are likely to be the most effective in reducing the racial wealth gap.*

— Laura Sullivan<sup>154</sup>

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.<sup>155</sup>

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<sup>150</sup> See JOHNSON, *supra* note \_\_\_. I’d be remiss if I didn’t note that Black Wall Street met a horrible end in the Tulsa Massacre of 1921. Unfortunately, even property ownership cannot fully protect a group against violence and other illegal acts.

<sup>151</sup> See Waldron, *supra* note \_\_\_, 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”).

<sup>152</sup> 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 had separate property that they could use in protecting themselves and their families.”).

<sup>153</sup> Christopher Serkin, *THE LAW OF PROPERTY* 12 (2016).

<sup>154</sup> Laura Sullivan et al., *The Racial Wealth Gap*, DEMOS, <https://static1.squarespace.com/static/6201784fed12fa2baee377b0/t/625ecb561b173761b3a3b929/1650379606773/Demos+RacialWealthGap.pdf>.

<sup>155</sup> For foundational treatments on the relationship between property ownership and wealth creation, see 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



Two people might inhabit identical houses. But if Ophelia owns her dwelling 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 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*.<sup>156</sup> 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.<sup>157</sup> 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.

Karl Marx fully appreciated the wealth-building power of privately held capital property, which is why he sought to abolish it.<sup>158</sup> In Marx's 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, Marx predicted, systemic oppression.<sup>159</sup> And indeed, there can be little argument

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Stuart Mill, *PRINCIPLES OF POLITICAL ECONOMY* (1848); Adam Smith, *AN INQUIRY INTO THE NATURE AND CAUSES OF THE WEALTH OF NATIONS, BOOK II - OF THE NATURE, ACCUMULATION, AND EMPLOYMENT OF STOCK* (1776).

<sup>156</sup> See James Bonar, *ELEMENTS OF POLITICAL ECONOMY* 45 (1904) (reciting the canonical definition of capital as "wealth that is used to produce more wealth").

<sup>157</sup> See Irving Fisher, *The Role of Capital in Economic Theory*, 7 *ECON. J.* 28, 511 (1897).

<sup>158</sup> See MARX & ENGELS, *supra* note \_\_\_\_\_. It should be noted that Marx did not call for the abolition of *all* private property, which might include one's clothes and personal effects. Rather, he called for the abolition of *productive* (that is, capital) property.

<sup>159</sup> *Id.* at 21 ("The essential conditions for the existence and for the sway of the bourgeois class is the formation and augmentation of capital."), 20 ("The modern labourer, on the contrary, instead of rising with the process of industry, sinks deeper and deeper below the conditions of existence of his own class.").

that differences in property ownership can exacerbate existing inequalities.<sup>160</sup> 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.<sup>161</sup>

Yet rather than remedy inequality by taking the wealth-building power of capital property away from everyone, as Marx would have it, a far more effective approach has been to help *more* people acquire that power. The superiority of the latter approach can be seen by comparing changes in aggregate social welfare between Communist and capitalist countries over the long term.<sup>162</sup> 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.<sup>163</sup>

We can also see how modern, progressive movements are now leveraging the wealth-generating potential of property to address racial inequality.<sup>164</sup> Many programs, both public and private, are actively working to increase black household wealth by helping more black families to become homeowners.<sup>165</sup> 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.<sup>166</sup>

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<sup>160</sup> See Joseph Stiglitz, *THE PRICE OF INEQUALITY* (2013) (chronicling the increasing divide between the wealthy and the poor in the United States).

<sup>161</sup> See Rakesh Kochhar and Mohamad Moslimani, *Wealth Surged in the Pandemic, but Debt Endures for Poorer Black and Hispanic Families*, PEW RESEARCH CENTER (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/>. See also Dorothy A. Brown, *THE WHITENESS OF WEALTH* (2022).

<sup>162</sup> O. L. Reed, *Nationbuilding 101: Reductionism in Property, Liberty, and Corporate Governance*, 36 VAND. J. TRANSNAT'L L. 673, 690-92 (2021).

<sup>163</sup> See David Boaz, *Capitalism, Global Trade, and the Reduction in Poverty and Inequality*, CATO INSTITUTE (Apr. 14, 2016), <https://www.cato.org/blog/capitalism-global-trade-reduction-poverty-inequality>; Branko Milanovic, *Global Income Inequality by the Numbers: In History and Now - An Overview*, WORLD BANK (Nov. 1, 2012), <https://elibrary.worldbank.org/doi/epdf/10.1596/1813-9450-6259>.

<sup>164</sup> Mehrsa Baradaran, *Closing the Racial Wealth Gap*, 95 N.Y.U. L. REV. ONLINE 57 (2020).

<sup>165</sup> See, e.g., California Housing Finance Agency, Black Homeownership Initiative, <https://www.calhfa.ca.gov/community/buildingblackwealth.htm>; Izzy Woodruf, *Housing and civil rights leaders announce national initiative to increase Black homeownership*, NATIONAL FAIR HOUSING ALLIANCE (Jun. 18, 2021) <https://nationalfairhousing.org/housing-and-civil-rights-leaders-announce-national-initiative-to-increase-black-homeownership/>.

<sup>166</sup> *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.”).

## 7. *Civilization*

*Government is instituted to protect property of every sort; as well that which lies in the various rights of individuals, as that which the term particularly expresses. This being the end of government, that alone is a just government which impartially secures to every man whatever is his own.*

—James Madison<sup>167</sup>

Each of the above-described features of property can be considered an individual benefit in that it accrues primarily to 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, precivilization—a person may obtain a “right to something”—that is, an object—in only two circumstances. Either he is the first to possess the object, or he is strongest. Yet even these two categories collapse upon further reflection. The first finder can exclusively possess a good only *until* a stronger second person takes it by force. Thus, exclusively possessing property in a precivilized setting ultimately depends on maintaining superior strength.

It is for this reason, Rousseau continued, that the right to exclusive possession “doesn’t become a true right until property-rights are established.” 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.<sup>168</sup> 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.<sup>169</sup> In fact, by some accounts, the *primary* reason the state exists—and the reason it was originally created—is to protect property rights.<sup>170</sup>

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

<sup>167</sup> PROPERTY (1792).

<sup>168</sup> See Max Weber (defining the state as an entity that has been granted a legal monopoly on force).

<sup>169</sup> Guido Calabresi & A. Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 HARV. L. REV. 1089, 1090 (1972) (“Whenever a state is presented with the conflicting interests of two or more people, or two or more groups of people, it must decide which side to favor. Absent such a decision, access to goods, services, and life itself will be decided on the basis of ‘might makes right’ - whoever is stronger or shrewder will win.”).

<sup>170</sup> SERKIN; MADISON; John Locke, SECOND TREATISE OF GOVERNMENT (“Government has no other end, but the preservation of property.”).

maturity of its property system.<sup>171</sup> 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 by differences in property *systems*. The problem, de Soto contends, is not that third-world countries lack sufficient capital; it is that such capital is rendered inaccessible by immature property systems.

Whereas Nancy the New Yorker might borrow against the equity in her house to start a business, Elias the Ethiopian, 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. 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. Both domestic and foreign investment, therefore, suffer when a state cannot provide reliable information about precisely who owns what.<sup>172</sup>

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 poorest class of interest holders. 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. 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.

Even after feudalism's demise, severe wealth inequality has continued to serve as a reliable bellwether 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

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<sup>171</sup> See Carol M. Rose, *Property as the Keystone Right?*, 71 NOTRE DAME L. REV. 239, 331 (1996) ("[W]hen ownership is insecure, we see something like the turmoil of recent Russia or indeed of any place undergoing social revolution.")

<sup>172</sup> <https://www.mcc.gov/news-and-events/event/outreach-062023-lae-webinar/>;  
<https://www.godrejproperties.com/blog/digitization-land-records-transforming-indias-land-management/>

French Revolution of the eighteenth century. 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.

### 8. *Improving Social Welfare*

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.” Garrett Hardin provided perhaps the most famous illustration of this principle by describing the “tragedy of the commons,” such as in the case of an open field. If every shepherd is free to graze without restriction, the land will eventually be rendered barren, making it useless to everyone. 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. 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 overgrazes 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.

Of course, property isn’t the only solution to the tragedy of the commons. The state could instead use regulation, such as by granting each shepherd a token entitling him to graze at most one tenth of the land. Or it could prohibit any shepherd from bringing more than a certain number of animals onto the land or from grazing for longer than a certain number of hours each week. But in some cases, regulation is not as effective as property in constraining human behavior. A token system might fairly divide the available resources, but it would not incentivize any shepherd to reseed and cultivate the land, each shepherd knowing that he might benefit from only 10% of his labor. And it might be difficult to detect and punish

over-grazing. Disputes could easily arise as to the size of animals permitted on the land, precise entry and exit times, and the fact that earlier entrants might graze the most fruitful areas. Contrast those difficulties with the ease of simply detecting whether a shepherd has crossed into a neighbor's private lot.

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 in an incorrect way 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, horror stories of trashed Airbnb rentals, and the high rate of crashes involving on-demand automobiles. 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?

Property also improves social welfare by facilitating bargaining and promoting the efficient allocation of resources. Demsetz, characterizing Ronald Coase's famous theorem, articulated this phenomenon as follows: "In a world of zero transaction costs, resources ... tend to concentrate in the hands of those who have the highest valuation of them."<sup>173</sup> For example, suppose a tractor is auctioned for sale. If Les believes he can use that tractor to generate \$90,000 in crop revenues per year, but Moe believes he can use it to generate \$100,000, Moe is likely to offer the winning bid and put the tractor to more productive use. Thus, property rights help to place resources in the hands of those who will use them most effectively. In a world of limited resources, that more effective use will generally inure to the benefit of the broader community.

Contrast this dynamic with Marx's ideal economic order in which resources are allocated to citizens based on their need.<sup>174</sup> While this sentiment is laudable, it obscures an informational problem. Faced with the task of giving the tractor to either Moe or Les, even the most capable third party (here, the state) might find it hard to determine which person would value the resource more. But money can often cut through the fog by

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<sup>173</sup> Harold Demsetz, *Toward a Theory of Property Rights*. ("The function of property rights is not simply to protect the initial acquisition of resources, but to facilitate their efficient use.") (Ronald Coase, *The Institutional Structure of Production*, 1988).

<sup>174</sup> See Karl Marx, CRITIQUE OF THE GOTHA PROGRAMME 10 (1933) ("From each according to his abilities, to each according to his needs.").

reducing the matter down to a simple question of which party is willing to pay more.<sup>175</sup> Property, therefore, improves social welfare not only by providing the conditions necessary for civilization and forcing owners to internalize the costs of their actions but also by ensuring that resources eventually find their way into the hands of those who will put them to the most productive use.

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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. Because markets suffer from their own informational problems, and transaction costs are never zero, resources sometimes do *not* find their way to those who will use them most productively. The compounding effects of capital can lead to severe inequality.<sup>176</sup> 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."<sup>177</sup> 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 caused the Supreme Court to strike down progressive social welfare legislation during the *Lochner* era. And both socialism (weakening property rights) and

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<sup>175</sup> Cf. Frank Easterbrook, *Cyberspace and the Law of the Horse* ("[I]t is awfully hard to know what the optimal compensation package for authors is, unless the property rights are clear.").

<sup>176</sup> See Thomas Piketty, *CAPITAL IN THE TWENTY-FIRST CENTURY* (2014) (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).

<sup>177</sup> See Michael A. Heller, *The Tragedy of the Anticommons: Property in the Transition from Marx to Markets*, 111 HARV. L. REV. 621 (1998). See also Elinor Ostrom, *GOVERNING THE COMMONS* 13-15 (1990) (offering examples of successful commons in the physical space).

Communism (abolishing them) are appropriately 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.

### III. THE RISK OF A REGRESSIVE INTERNET

As explained in Part II, 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. The corollary of this assertion is that weakening or eliminating property can erode these important benefits and rights, 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 I, 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 30 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 healthcare, 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.”<sup>178</sup> 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.”<sup>179</sup>

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.”<sup>180</sup> 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 because they lack the network infrastructure on which those resources depend.

In at least one area of law, courts have attempted to address the effect of the “digital divide” on disadvantaged groups. The Americans with Disabilities Act prohibits discrimination based on disability in places of public accommodation. Although the ADA was passed in 1990—years

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<sup>178</sup> <https://publications.parliament.uk/pa/ld5803/ldselect/ldcomm/219/219.pdf>

<sup>179</sup> *Id.* See also Chinmayi Sharma, *A Framework for Interoperability Interventions* (“Many of us live online—from communicating with loved ones to accessing financial assets, it is functionally impossible to have a meaningful life without some degree of reliance on the internet.”).

<sup>180</sup> 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>.

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,”<sup>181</sup> several courts of appeal have held that the ADA applies to websites.

## 2. *Cyberplace*

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

The answer, I think, is that cyberspace has become a *place*. Society is not simply using the internet more; it is actively moving into cyberspace. We are increasingly *living* online.

More people now meet their romantic partners in cyberspace than in any other setting.<sup>182</sup> Online “communities” are created over shared interests that would be too niche to gain critical mass in most cities. Virtual worlds like Second Life and IMVU attract millions of users, many of whom spend tens of hours per week in digital bars, clubs, and parks, far more than they would or could in offline venues. We even criticize such excesses by saying that a given person “lives online,” a condition in which online life has become more real or impactful to that person than the real world.<sup>183</sup>

A great deal of internet innovation has historically centered on closing the gap between online and offline experiences, making cyberspace more and more like a physical place. The 1990s saw the addition of images to the previously text-only internet. The 2000s witnessed the explosion of audio and video experiences. And advancements in webcams, mobile apps, and broadband internet brought ubiquitous two-way video to the 2010s.

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 to make cyberspace increasingly indistinguishable from real space. Modern VR goggles provide 360-degree

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<sup>181</sup> Nat’l Ass’n of the Deaf v. Netflix, Inc., 869 F. Supp. 2d 196, 200 (2021).

<sup>182</sup> <https://web.stanford.edu/~mrosenfe/>

<sup>183</sup> <https://www.adalovelaceinstitute.org/feature/living-online-long-term-impact-wellbeing/>

views of virtual venues, and tactile feedback devices, including full-body suits, use air pressure, vibration, and electrical stimulation to bring haptics to the online experience. Such developments will soon enable—and indeed some already enable—users to touch, hug, sexually stimulate, or even hit other users. It should therefore come as no surprise that the adjective often used to describe the modern, VR-powered internet is “immersive.”

At the same time, as more of the physical world moves into cyberspace, cyberspace is moving 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 internet. 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 constellations are reducing internet dead zones to a negligible portion of the earth’s surface. A concurrent development in the VR space has been the emergence of “enhanced reality,” in which technology is used to overlay the virtual onto the physical, a further blurring of the line between online and offline. As Eric Goldman put it, “As the internet increasingly pervades physical items in the ‘offline’ world, what isn’t ‘the Internet’?”<sup>184</sup>

Even courts are recognizing that the barriers between the physical world and the virtual world are breaking down. As noted above, several federal circuit courts of appeal have held that websites may constitute “places of public accommodation” for purposes of the American with Disabilities Act. In addition, in *South Dakota v. Wayfair*, the Court overruled its earlier decision that prevented states from requiring out-of-state retailers to collect and remit taxes on sales to residents.<sup>185</sup> Acknowledging “the continuous and pervasive virtual presence of retailers today,” the *Wayfair* Court dismissed the physical presence rule as “appropriate to the nineteenth century, not the twenty-first.”<sup>186</sup> 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 distinction between physical facilities ... and virtual services and platforms ... appears increasingly tenuous.”<sup>187</sup>

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<sup>184</sup> Goldman, *INTERNET LAW 2* (2022).

<sup>185</sup> See 138 S. Ct. 2080, 2091, 201 L. Ed. 2d 403 (2018) (overruling *Quill Corp. v. N. Dakota By & Through Heitkamp*, 504 U.S. 298, 301, 112 S. Ct. 1904, 119 L. Ed. 2d 91 (1992))

<sup>186</sup> *Id.* at 2092 (quotation omitted)

<sup>187</sup> *Wilson v. Twitter*, 2020 U.S. Dist. LEXIS 110800 (S.D. W. Va. 2020).

### B. *Return of the Unpropriated Society*

If cyberspace is indeed unpropriated, as I argued in Part I, and if society is continuing to migrate into cyberspace, as I attempted to demonstrate above, then it would seem to follow that society itself is becoming increasingly unpropriated. And if the loss or weakening of property rights can have deleterious effects on a society, as I demonstrated in Part II, then it behooves us to examine whether the modern, internet-fueled move away from 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 II as a rubric. In particular, I'll examine the degree to which a malady that previously presented itself in an unpropriated physical society is apt to re-present itself in an unpropriated online society.

#### 1. *Personhood*

Given that personhood—in property terms, *self-ownership*—is the most fundamental property right an individual can possess,<sup>188</sup> it's worth assessing the impact of an internet that doesn't recognize any inherent right to personhood. In other words, does the absence of personhood in cyberspace detract from the right of self-ownership in a society that lives online?

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. 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.<sup>189</sup> Following the revocations, not only was their speech on the platform reduced by 100% (obviously), but other users' speech *about* those figures declined by as much as 97%.<sup>190</sup>

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<sup>188</sup> THE ANTI-SLAVERY EXAMINER, PART I (1836) (“[S]elf-right is the foundation right...to which all other rights are fastened.”).

<sup>189</sup> Shagun Jhaver et al., *Evaluating the Effectiveness of Deplatforming as a Moderation Strategy on Twitter*, 3 ACM TRANS. HUM.-COMPUT. INTERACT. 2, Art. 18 (2021).

<sup>190</sup> *Id.*

Of course, users who lose their accounts on the major internet platforms are not necessarily booted from the internet itself. But they are 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 using these more basic platforms or to maintain public identities through them, 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 often be battered, murdered, or even raped,<sup>191</sup> without legal penalty, no matter how realistic the violation or how similar the avatar might be to the user's real-world likeness. 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 in a way that is indistinguishable from an ostensible recording of the victim herself engaging in the act. 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.<sup>192</sup> 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.

Finally, as some have argued, many websites profit from users' "labor" without compensating them. Imagine a company that placed two lightweight braces on your knees. Other than providing a very small amount of resistance as you walked, the braces were unobtrusive. Yet as you moved throughout the day, the friction captured by those braces provided free electricity to the company, which it sold to others. Doing so would obviously violate your monopoly on the fruit of your labor. But online services arguably engage in analogous behavior when they monetize the data they

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<sup>191</sup> *Before Roblox: An Online Rape When Cyberspace Was New*, THE VILLAGE VOICE (Jul. 25, 2018), <https://www.villagevoice.com/before-roblox-an-online-rape-when-cyberspace-was-new/>

<sup>192</sup> Margi Murphy, *'Nudify' Apps That Use AI to 'Undress' Women in Photos Are Soaring in Popularity*, BLOOMBERG (Dec. 8, 2023), <https://time.com/6344068/nudify-apps-undress-photos-women-artificial-intelligence/>.

collect in the background as you browse the web, read the news, and interact with friends. Of course, it would be overwrought to compare these business practices with any form of actual slavery, one of the worst types of injury to personhood. My point is only that the common practice of profiting from users' online activities without compensation or meaningful consent represents yet another tax on their personhood, albeit a small one.

## 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. No matter whether you purchased your in-site entitlements with a credit card or earned them as sweat equity, providers can prevent you from transferring them to other users. And although you might bring your vinyl records on your trip abroad and play them on any available turntable, the DRM-protected MP3 that you “purchased” may or may not work depending on which country you happen to be staying in when you hit the play button.

This kind of micromanagement cannot be explained merely by the fact that users do not hold title to their online resources. A dealership might limit the number of miles a customer can drive a leased vehicle or prohibit alterations, but it doesn't tell the customer which hours she may drive or who can ride along. A landlord might cap the number of guests permitted in a rental unit, but it generally cannot tell a tenant *whom* he may have as guests or what they may eat when they come over. That level of control in online spaces is made possible by code, which can detect, report, and enforce violations of nearly any rule a provider might set.

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 can see and log every website you visit.<sup>193</sup> 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.

Software provides a useful case study of this shift. For decades, software was licensed and sold to run on local devices—so called “on-prem” software. Once so installed, licensees could use the software in private, as vendors were powerless to observe how and where their products were being used. This privacy began to dwindle as vendors shifted from paid-up perpetual licenses to “software subscriptions” that required users to make ongoing payments to continue using the product, the latter of which appropriately became known as “software-as-a-service” or “SaaS.” The need to prevent users from continuing to use on-prem software after their subscriptions expired led vendors to redesign their products. Software began periodically “phoning home” over the internet to check whether the user maintained an active subscription and, if not, locking the user out from the software on his own device.

From on-prem software that monitored compliance, it was a small step to begin collecting and reporting other useful information back to the vendor. Vendors began monitoring all manner of user interactions with their software—*How often are features A, B, and C used? What did the user do to cause the application to crash?*<sup>2</sup>—all of which could be used to improve the software and drive more revenue. This evolution reached its logical end when many vendors decided to dispense with on-prem installations altogether. Advances in JavaScript, coupled with sophisticated browser rendering engines, made it possible to migrate applications entirely to “the cloud.” Now running software on their own devices and delivering it to users over the web, vendors can observe every aspect of users’ behavior when interacting with their software. The loss of privacy is now complete.

To be sure, some service 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. And Amazon Web Services designed its Nitro hypervisor to make it technically impossible to peer into customers’ cloud-

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<sup>193</sup> Unless you use a VPN service. But even if you do that, your VPN provider could do the same.

hosted virtual machines. But, importantly, when privacy protections like these exist, it is because *providers* have decided to offer them. Unlike the privacy that naturally inheres in property, privacy in services 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. Unlike a rental car company or a landlord, an online service provider can permit the state to inspect users' content and activity within its systems. And even the Stored Communications Act, which statutorily protects emails from warrantless searches by law enforcement, applies for only the first six months in which an email is stored on a provider's servers.<sup>194</sup> No such six-month expiration date applies to warrantless searches of physical property.

#### 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. 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 of their online time in private cyberplaces, where providers can set the terms of permissible discourse. 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.<sup>195</sup> And in the offline world, it would be sage wisdom, like telling a frustrated pundit that the Washington Post can't stop her from speaking her mind in her own apartment. But as we've discovered, in the online world, there is no such thing as private property. No inalienable objects, no 600-acre farms that the state cannot take away except by due process. Digital identity, digital chattels, and even digital realty (in the form of websites) are service entitlements that can be revoked under the terms set by providers.

As I've detailed in other work, "content moderation" has been steadily moving down into the core infrastructure of the internet. A marginalized speaker who is forced to strike out on her own by building her own website can cobble together a great many substitutes. She can stand up her own web server, write her own code, and even buy her own hardware. But to make

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<sup>194</sup> *But see* United States v. Warshak, 631 F.3d 266 (6th Cir. 2010).

<sup>195</sup> *See* Section II.B.4.



her website accessible, and therefore to speak, on the public internet, she must rely on a domain name issued by a registrar, IP addresses managed by a regional internet registry, and packet carriage by each network operator along the transmission path. These core resources, provided by private parties and generally unregulated, can and have been revoked in attempts to take lawfully operated websites off the internet, a phenomenon I call “viewpoint foreclosure.”

Thus, without private property, a person can have no guarantee she will be permitted to speak 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,<sup>196</sup> property, both real and personal, serves as a bulwark against marginalization. The heretic whose viewpoints no publishing house will touch can, as a last resort, 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.<sup>197</sup>

But because digital realty is an illusion—no website or online community has any right to exist—property’s critical protection for the marginalized was discarded on society’s journey from real space to cyberspace. No amount of real-world property (i.e., 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.<sup>198</sup>

### 6. *Wealth*

Because most wealth continues to be measured by offline resources (cash, stock, real property), society’s move to an unpropertied internet poses less of an immediate threat to the wealth-generating benefits of private

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<sup>196</sup> See Section II.B.5.

<sup>197</sup> Waldron

<sup>198</sup> 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> (“While users remain free to express themselves offline, we should once again take a step back to ask whether it’s any easier to defend the proposition that if certain users want to exercise their constitutional rights, they just have to leave the internet.”); Waldron, *supra* note \_\_, 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”).

property. And although the most valuable online resources—domain names and IP addresses—are not currently recognized as title-held property, they are generally alienable, with thriving secondary markets available for their sale and resale.

But unlike property in real space, the utility of these assets for wealth building is cabined by their impermanence. As noted, because domain names and IP addresses are merely service entitlements, they can be revoked if a provider amends its terms to do so. This instability limits their role in building lasting, intergenerational wealth, much like an inherited house that could be seized by another party at any time.

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. 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 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 steps in civilization's progressive journey.

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 flow exert total control over how they can be used or alienated. 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). 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. In fact, the early internet was widely regarded as an instrument of progress precisely because it seemed to level the playing field. 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.<sup>199</sup> 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.” Coincident with this spirit of user egalitarianism was only a modestly capitalized ecosystem of 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 87% of online advertising revenues in the U.S. go to just three companies, 57% of news consumption in the U.S. occurs on Facebook, Amazon accounts for 22% of all online U.S. retail spending, and seven of the ten wealthiest companies on the planet (who boast a combined \$10.7 trillion in market capitalization) are technology companies that make their revenues primarily from internet-enabled services and devices. 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 evolution.

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<sup>199</sup> See, Glenn Reynolds, *AN ARMY OF DAVIDS: HOW MARKETS AND TECHNOLOGY EMPOWER ORDINARY PEOPLE TO BEAT BIG MEDIA, BIG GOVERNMENT, AND OTHER GOLIATHS* (2007).

### 8. *Improving Social Welfare*

Lastly, it's worth considering the loss of certain welfare-improving features of property. As explained, property helps to reduce negative externalities by forcing owners to internalize the costs of their actions and incentivizes them to better care for resources they exclusively hold. It also improves social welfare by helping resources to find their way into the hands of those who will use them most productively. How applicable are these benefits to the digital world such that we should worry about their absence in cyberspace?

Starting with the latter benefit, the allocation of online resources presents a mixed bag. On the one hand, Coase's Theorem concerns the allocation of *rivalrous* goods, yet many online resources are non-rivalrous. Providers can freely create and replicate many kinds of digital chattels, whether virtual goods or cloud computing credits, often at zero marginal cost. If users don't need to compete for unique goods, the risk of inefficient allocation should be less of a concern.

On the other hand, where online resources are unique or otherwise rivalrous, the online model threatens Coasean efficiency for several reasons. Most importantly, there's the problem of alienability. Contract rights, unlike property rights, are personal to the parties involved. They cannot be transferred or assigned to third parties (who might value them more) without the consent of the original parties. Because online service entitlements are ultimately contract rights rather than property rights, users typically cannot sell or transfer them without the provider's consent, which providers often withhold. Even where providers consent, the need to obtain that consent—and sometimes pay for it—increases transaction costs. Also, unlike property, for which the *numerus clausus* principle cabins the kinds of restrictions that can attach to a conveyance, the infinite malleability of contract rights can make transfers more complex, also increasing transaction costs. All of this serves to create illiquidity in the online ecosystem, much like the developing nations in de Soto's account that struggle to unlock the capital embedded in their land and homes because their immature property systems make it nearly impossible to do so.

The absence of property rights in cyberspace also 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.<sup>200</sup>

Could the absence of user-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 property in cyberspace creates conditions in which some of the worst forms of behavior are not adequately disciplined.

### *C. Tailoring My Thesis*

Having boldly stated my claims, it's time to walk them back 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. 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 slavery, feudalism, and coverture that were actually practiced in centuries past. Accordingly, some readers may question the danger of an unpropriated 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.

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<sup>200</sup> For a different take, see James Grimmelmann, *The Internet Is a Semicommons*, 78 *FORDHAM L. REV.* 2799 (2010) (arguing that the internet has been successful because it blends both private property, in the form of private control over devices, and public-like spaces, by virtue of its open-access nature).

There's no doubt we'd see some new and interesting benefits. Resources could be shared with near-zero transfer costs. Total surveillance would ensure that fewer crimes are committed.<sup>201</sup> And acceptable use policies might force people to speak less offensively than the First Amendment would otherwise permit. Ida Auken's vision of an unpropriated 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-propriated societies. I hope readers would agree that a society that lived entirely in an unpropriated internet 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 unpropriated internet presents significant risks to important individual and societal interests *but only insofar as* society has moved into cyberspace.

In the 1990s, when society kept only a toe dipped into the dial-up world of usenets and read-only webpages, the lack of property in cyberspace presented no more cause for concern than the lack of property in telephone services. Since that time, as described above, society has lurched into cyberspace, such that the internet can no longer be regarded as a mere information service. The metaphor of "cyberplace" now deserves, or will soon deserve, to be taken seriously.

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 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 elimination 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.

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<sup>201</sup> Indeed, as Gary Pulsinelli noted to me, removing human contact would greatly diminish the number of crimes it is even *possible* to commit.

#### IV. PROPRIATING THE INTERNET

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

##### *A. Legal Tools and Their Barriers*

At first glance, it wouldn't seem to be too hard to introduce property rights into cyberspace. Simply pass a law declaring that this or that resource shall be treated as property, and then allow existing common law and statutory property doctrines to do their work. For example, I've argued (and still believe) that domain names and IP addresses should be treated as title-held property and that the entities that administer those resources should generally not be able to revoke them without potentially being held liable for the tort of conversion. Even better, I've argued, would be to enshrine them as a new class of federally protected intellectual property, on par with patents, copyrights, and trademarks.

But this solution, elegant and administrable for core internet resources, might be more difficult to implement for higher-layer resources like online accounts, site-specific entitlements, and virtual goods. Two reasons, in particular, complicate the enterprise of elevating all such resources to the status of cyberproperty: forced carriage and interoperability.

##### *1. Forced Carriage*

As I've intimated throughout this Article, the absence of cyberproperty wasn't necessarily a deliberate decision. It was, rather, a natural consequence of the fact that the internet, and nearly everything made available through it, is a service. A website does not exist in tangible, corporeal form, nor does any account or entitlement made available through it. Like the domain name system, packet transport, video calling, and newsfeeds, websites can exist only for as long as web servers are powered up and responding to user-originated requests. Turn off every one of OpenAI's servers, and ChatGPT goes away. The result is wholly different from a physical book, a house, or shares of a corporation, each of which can continue to exist even if the world's electric grid fails and no one bothers to do a lick of work.

As a result, giving users stable, persistent rights to cyberproperty would require making private parties provide ongoing services. Vesting a user with

a perpetual right to her TikTok account, for example, would require Byte Dance to always provide its TikTok service to her. Likewise, if the state wanted to protect a person's right to a virtual island in Second Life or a diamond sword in Minecraft, it would have to somehow conscript the relevant companies to offer their services in perpetuity.

Obviously, the Thirteenth Amendment prevents the state from protecting a user's "boost" entitlements by forcing Tinder to stay in business if it preferred to close. But even if the state guaranteed only that users could hold onto their digital chattels for so long as a company remained in business, that guarantee would present the all-too-familiar problem of forced carriage.

Forced carriage (also called "common carriage") occurs when the law forces a firm to provide services to a customer it would otherwise prefer not to serve, whether for economic or ideological reasons. Although various industries have historically been regulated as common carriers—among them inns, ferries, trains, package deliverers, and telephone operators—forced carriage has not yet been successfully applied to online service providers.<sup>202</sup> For example, 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.

Such laws, however, raise First Amendment concerns. In particular, social media companies have argued that their content moderation practices are inherently expressive. When they decide to allow users to express certain viewpoints on their platforms (say, LGBT pride) while banning users who continue to express certain other viewpoints (say, Holocaust-denial), they are exercising the kind of editorial discretion practiced by newspapers. The Eleventh Circuit has agreed with that argument, enjoining Florida's law, and the Supreme Court seems poised to do the same for Texas's law, vindicating the editorial rights of online service providers to decide for themselves which user accounts to allow. If a user's "property" interest in his YouTube account prevented Google from banning him because he posted Holocaust-denying videos, or from taking down those videos, that property system would operate like a forced carriage law. And it would be subject to the same First Amendment limitations.

In sum, any effort to provide users with stable property rights in their online accounts would run up against non-trivial regulatory and

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<sup>202</sup> As an exception, ISPs were briefly subjected to common carriage under the FCC's 2015 "Net Neutrality" rules. *See* 2015 Open Internet Order. Those rules were quickly undone by the FCC's 2017 Restoring Internet Freedom Order.



constitutional barriers, not least of which are the Constitution's prohibitions on involuntary servitude and compelled speech.

## 2. *Portability*

One potential response to the constitutional problems described above 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 to another provider.

For example, customers currently enjoy the right—albeit a right granted by ICANN rather than the law—to transfer their registered domain names to any other accredited domain name registrar. IP address holders likewise can often move their IP address holdings between any of the world's five regional internet registries. Such portability helps 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. That portability also makes such resources alienable, enabling secondary markets to emerge for buying and selling domain names and IP addresses that promote allocative efficiency.

But the portability of these particular resources is made possible only because they have been standardized across the industry. All domain name registrars and all regional internet registries operate in fundamentally similar ways and indeed are required to do so to remain accredited by ICANN. But unfortunately, service heterogeneity prevents many other kinds of internet resources from being similarly mobile.

For example, although most social media platforms today have some basic things in common—they allow users to create accounts, to link those accounts to other users, and to post content—the similarities stop there. Facebook generally connects users in a one-to-one fashion (“friends”), whereas TikTok utilizes a one-to-many “follow” mechanism. Stack Overflow users can deploy their reputation points as bounties to incentivize others to answer their questions, but Reddit users cannot “spend” their Reddit karma on extra privileges or benefits. Second Life avatars are highly detailed and customizable, whereas Minecraft “skins” are simple, pixelated affairs.

So often, online resources are heterogeneous because online services, even those that compete for the same customers, take pains to differentiate themselves from each other. In a sea of millions of websites, such service differentiation is essential for standing out and stealing share from one's less feature-rich competitors.

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, initially included a provision on *workload* portability. 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. 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.

In sum, making online resources portable across providers could mitigate the problem of forced carriage and thereby make it possible to provide users with persistent entitlements to cyberproperty. But the lack of interoperability between modern web services presents a significant obstacle to that portability.

### *B. Technical Tools*

Although the breakneck speed of competitive innovation presents barriers to protecting cyberproperty today (by virtue of the heterogeneity it fosters), it might also present a technological solution tomorrow. Blockchain-enabled technologies—often called “Web 3.0”—promise to decouple virtual items from providers. Non-fungible tokens (NFTs), despite their embarrassing history, offer a mechanism for cryptographically recording ownership of online resources that is provider-independent. For example, Decentraland, a virtual reality platform that utilizes the Ethereum blockchain, enables users to buy and sell virtual land and other assets, sold as NFTs, making them transferrable to other platforms that support Ethereum-based NFTs. Enjin, a blockchain-based gaming system, allows developers to tokenize in-game items on the blockchain and to move them across games within the Enjin ecosystem. And cryptocurrencies, the archetypal use case for blockchain, already offer a vehicle to own and transfer value, independent of banks and payment processors.

Clearly, the limitation inherent in any blockchain-based solution is that there must be an existing ecosystem of providers who have all built their applications atop the same blockchain framework in order to interoperate with each other. Despite its hype and use in cryptocurrency, blockchain as a general technology currently remains niche and generally unsupported, limited to a small number of “forward-thinking” firms. Snapchat was built with custom code, YouTube predated Bitcoin by four years, and WeChat

isn't about to swap out its proprietary codebase for something Ethereum posted on GitHub. The likelihood that today's major players will fundamentally rearchitect their systems using blockchain-based technology to make them interoperable seems slim indeed.

Still, the notion that online industries might eventually coalesce around common, interoperable technologies (whether blockchain or something else) may not be that far-fetched. For one, although established players may be hopelessly stuck with the tech debt of old codebases, startups aren't. The latter increasingly leverage popular open-source libraries to reduce the time spent working on undifferentiated base functionality so that they can focus on the bells and whistles that will set them apart from competitors. Consider, for example, the open-source Mastodon project, which enables any company to create a new social media platform in a fraction of the time it would take to create a bespoke solution. Already, new social media platforms have sprung up that use Mastodon as a common codebase and enjoy a degree of interoperability.

Moreover, examples can be found of even tech giants replacing their legacy systems with open-source frameworks to optimize development and improve compatibility. For example, Microsoft famously replaced its internally developed web browser engine with Google's open-source Chromium engine, as have other browser-makers. Countless web giants utilize open-source JavaScript frameworks for their websites. Despite dozens of different manufacturers, mobile phones have mostly coalesced on just two operating systems, with the open-source Android operating system now powering 80% of the world's smartphones. And the technology sector has largely settled on just three computer operating systems—Windows, MacOS, and Linux—all of which can interoperate and each of which is built atop a UNIX-compatible subsystem.

It is therefore not inconceivable that entire industries could eventually adopt common blockchain functionality and thereby become interoperable. And, as we've seen, interoperability is key to creating platform-independent cyberproperty. Marc Andreessen has described Web 3.0 in the following terms: Web 1.0, with its barebones, static webpages, was fundamentally a "read" technology. It offered users little more than the ability to consume information curated by website operators. Web 2.0, with its interactive blogs and real-time social media applications, added a "write" functionality to the internet. Web 3.0, with its ability to create platform-independent assets, finally brings "own" to the equation. I think that sentiment is exactly right.

### *C. A Modest Proposal*

I conclude by offering a proposal for how the law could establish or encourage cyberproperty. As I hope will be seen, this proposal is rather modest. It would not require us to fundamentally rearchitect the internet or 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 merit property status, 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. They also enable users to establish their own digital realty (websites) on which they can build and maintain their own digital chattels without requiring any other website provider to continually provide services.

Fortunately, such resources have been standardized, can be mostly operationalized without requiring a third party to continually provide services, and are portable between providers. The industry also 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 little to no First Amendment interests in how they administer basic names and numbers. 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. 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 like property, even if those entitlements were obtained using online sweat equity rather than cash and even if providers were forced into service (for as long as they remained in business).

## *2. Standardize Mature Technologies*

Once a given technology has attained maturity, the law should play a role in standardizing it to create interoperability between providers. Once again, such interoperability will be critical to enabling users to move to digital assets between providers and therefore maintain property rights in those assets without subjecting providers to forced carriage.

Could there ever be a future in which, for example, YouTube, TikTok, and Twitch became so homogenized that users could seamlessly port their accounts, content, and entitlements between the services? Perhaps yes. Already, these providers offer integration features such that it's not uncommon to see TikTok videos posted to YouTube or for livestreaming to occur on YouTube and Twitch simultaneously. And, as described above, established players sometimes do coalesce around common open-source codebases.

It's also important not to take a myopic 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, media encoding, and authentication mechanisms. And despite its very nascent state, we can already see standards emerging around virtual and augmented reality hardware and software.

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, cut-throat 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 and standardize the industry. 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 healthcare providers. And electronic funds transfer (EFT) regulations ensure that money can be transferred between different banking institutions and financial services. More recently, the European Union has taken the lead in corralling web and mobile phone players to implement common, consumer-friendly standards, such as Internet Relay Chat (IRC) to enable video calling between iPhone and Android devices, USB-C chargers for mobile phones, and data portability between cloud computing providers.

In addition to driving standardization and interoperability, government can further benefit consumers by anointing specific resources as “property” as they become portable. To be sure, this slow-follow approach might sometimes produce a lag of 10-20 years between when a new technology arrives on the scene and when its resulting resources are recognized as a title-held property. But that gap would also serve as an important buffer, giving new technologies the breathing room they need to grow and experiment with differentiation until such time as the technology standardizes and the consumer’s interest in property protection becomes commensurate.

### *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 propretization project by creating basic consumer protections. Here are a few suggestions.

*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 currency for her now-vaporized assets. 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 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.<sup>203</sup>

*Ensure Alienability.* The law looks skeptically on alienation restraints when it comes to physical goods. That same skepticism should attach 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 transfers. Moreover, for all the reasons that the law does not recognize any right to resell digital books,

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<sup>203</sup> See *Evans v. Linden Lab*.

songs, or movies, this right of alienation need not extend to intellectual property licenses.

*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. Privacy scholars have called for similar restrictions on the behavior of online service providers. As noted, some providers have even architected their services to prevent themselves from gaining access to their customers' content or communications. While the law need not go that far, it could impose ECPA-like protections for certain industries.

The lowest-hanging fruit in that orchard would be to protect users from the prying eyes of the state. Congress could (and should) amend the long-outdated Stored Communications Act to remove law enforcement's ability to access private emails after 180 days. In addition to extending the state's warrant requirement indefinitely, the same protections should be expanded beyond communications to all non-public user data.

The above protections in the case of nascent or intractably unique services do not create property rights *per se*. But they do mimic them. They represent a step closer to property status, either *en route* to eventual recognition as property or as a permanent safeguard to ensure that providers do not leverage the unpropertied nature of their services to take advantage of their users.

#### 4. *Support Technologies that Facilitate Ownership*

Finally, the state should support the development of technologies that make it possible for users to hold title to online assets in a provider-independent manner. Blockchain is likely to be the most promising technology for that project in the short term. For example, the Delaware Blockchain Initiative, launched in 2016, is currently using blockchain technologies to record land titles. And India's eHealth Block project, which uses similar technology to record medical records, is currently being piloted in a handful of Indian hospitals. But other technologies could potentially be leveraged to enable users to freely move digital assets between providers, paving the way for those assets' promotion to the status of property.

To be sure, 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 rights 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 recognizing and protecting cyberproperty rights 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.