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How the Blockchain Undermined Digital Ownership

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How the Blockchain Undermined Digital Ownership

Aaron Perzanowski*

Abstract

The shift from a market built around the sale of tangible goods to one premised on the licensing of digital content and services has done significant and lasting damage to the notion of individual ownership. The emergence of blockchain technology, while certainly not necessary to reverse these trends, promised an opportunity to attract investment and demonstrate consumer demand for marketplaces that recognize meaningful digital ownership. Simultaneously, it offered an avenue for alleviating worries about hypothetical widespread reproduction and unchecked distribution of copyrighted works. Instead, many of the most visible blockchain projects in recent years—the proliferation of new cryptocurrencies and the NFT craze, chief among them—have ranged from frivolous opportunities for speculation to outright fraud. Rather than sowing technological seeds that might have yielded a workable proof-of-concept for digital property interests in consumer goods, exploitative blockchain schemes have salted the earth, threatening to discredit the broader, and fundamentally more important, project of constructing a legal framework for digital ownership.

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INTRODUCTION

The legal system has struggled—and thus far, largely failed—to confront the growing need for property rights in digital assets.¹ Rather than adapting existing property law principles to recognize ownership interests in new classes of digital goods, courts have relied on terms of use, end user license agreements, and copyright assertions to resolve conflicts.² With near uniformity, that approach shortchanges consumers and empowers “sellers” to impose whatever terms they see fit when it comes to the downstream use and transfer of digital goods, undermining centuries-old common law principles in the process.³ At times, courts and other policymakers have explained this choice as an unavoidable consequence of the capabilities and limitations of current technology.⁴ Digital marketplaces, they lament, enable widespread copying of digital goods, but cannot effectively restrain their proliferation. If only some magical technology could impose perfect rivalry and

1. See Joshua A.T. Fairfield, *Bitproperty*, 88 S. CAL. L. REV. 805, 839 (2015) (noting that courts have tended to resort to intellectual property and contract law, rather than personal property, to resolve disputes over digital assets).

2. See *infra* note 22 and accompanying text.

3. There is growing evidence that this trend is not limited to digital goods or even software-enabled devices. Danielle D’Onfro, *Contract-Wrapped Property*, HARV. L. REV. (forthcoming).

4. See, e.g., U.S. COPYRIGHT OFF., LIBR. OF CONG., DMCA SECTION 104 REPORT 98 (2001) (recommending against any changes to the first sale doctrine because “forward-and-delete” technology “does not appear to be available” and “would probably not be 100 percent effective”); see also *Capitol Recs., LLC v. ReDigi Inc.*, 910 F.3d 649, 659 (2d Cir. 2018) (rejecting ReDigi’s technological effort to replicate physical transfers of digital goods, but holding out the possibility that some “other technology may exist or be developed that could lawfully effectuate a digital first sale”).

excludability, our legal system might tolerate the survival of personal property interests in the digital marketplace. But alas.

Early in its development—and to some, even still today—the blockchain appeared poised to address, if not entirely resolve, some of the challenges that dissuaded courts and other policymakers from embracing digital ownership.⁵ But as this Essay will argue, the blockchain not only failed to live up to those expectations, it has affirmatively harmed the broader project of digital ownership.⁶ By providing the technological infrastructure for a range of overhyped schemes—some merely frivolous, others predatory, and still others outright fraudulent—the blockchain fever dream and the inevitable backlash have tainted the long-running efforts to salvage the notion of personal property in the digital economy.⁷

Ultimately, there is no software program, digital rights management system (“DRM”), or distributed public ledger that can prevent all unauthorized copying and distribution of digital assets. Of course, that was always true in the analog world too.⁸ Instead of waiting for some *deus ex machina* to hand us a gift-wrapped solution, enabling digital ownership requires us to invest in the appropriate legal framework.⁹ We need a set of

5. In *The End of Ownership*, Jason Schultz and I discussed the role blockchain technology could play in enabling transfers of digital assets. See generally AARON PERZANOWSKI & JASON SCHULTZ, *THE END OF OWNERSHIP* (2016). Published in 2016, and written over the two preceding years, our work largely predated the emergence of NFTs. See Jolene Creighton, *NFT Timeline: The Beginnings and History of NFTs*, NFT NOW (Dec. 15, 2022), <https://perma.cc/CQ2F-EJG5> (noting that the first NFT was created in 2014, but the phenomenon did not gain momentum until 2017).

6. See *infra* Part II.

7. See *infra* Part II.

8. If you are envisioning a laborious process of scanning or photocopying *Infinite Jest* before taking it to your local used book shop, picture instead the easy, fast, and once-widespread practice of “ripping” a digital copy of a CD to your hard drive. See William Patry, *First Sale, Hard Copies, and Digital Copies*, PATRY COPYRIGHT BLOG (Oct. 25, 2005), <https://perma.cc/3AML-RXNW> (arguing that it is lawful to make a digital copy of a CD you own and then resell the CD).

9. Indeed, even if we assume science fiction technology straight out of *Star Trek*, tricky questions remain. See James Grimmelman, *ReDigi, Digital First Sale . . . and Star Trek*, PUBLISHERS WKLY. (Apr. 2, 2013), <https://perma.cc/HC3V-Y5FP> (analogizing digital first sale to *Star Trek*’s transporter technology and concluding that “the Internet is *both* a transporter

rules that legitimizes and facilitates secondary markets for digital assets, and one with clear limits to prevent abuses. In the absence of such a framework, the most powerful publishers and distributors of copyrighted works have strong incentives to oppose consumers' claims to digital property—as they have done historically for analog copies.¹⁰ Rights holders are content to charge us all a steadily escalating subscription fee, or perhaps a dozen such fees, every month until the day we die.¹¹ With a legal framework that recognizes property interests in digital assets in place, we might expect to see investment in and implementation of software and hardware that could effectively police secondary markets. But in the end, digital ownership is a legal theory, not a call for techno-solutionism.¹²

and a cloning machine. Unfortunately, copyright law is firmly, thoroughly convinced that technologies can only be one or the other”).

10. Book publishers have been hostile to secondary markets for well over a century. See *Bobbs-Merrill Co. v. Straus*, 210 U.S. 339, 341–44 (1908) (holding book publishers could not use copyright law to control book prices on the secondary market); see also *Kirtsaeng v. John Wiley & Sons, Inc.*, 568 U.S. 519, 525–29 (2013) (holding that book publishers cannot prevent the importation and sale of lawfully made books from foreign countries). Software companies have sued those with the temerity to resell tangible copies of their programs. See *Vernor v. Autodesk, Inc.*, 621 F.3d 1102, 1103–07 (9th Cir. 2010) (determining that a reseller of physical copies of software programs could not rely on the first sale doctrine because of purported license restrictions). Movie studios lobbied for the repeal of the first sale doctrine in the face of video rental markets. See PERZANOWSKI & SCHULTZ, *supra* note 5, at 30 (discussing the movie industry's resistance to the retail renting of videos). And video game publishers have treated secondary markets as an existential threat since the 1980s. *Id.* at 31–32.

11. Nearly half of U.S. consumers report frustration with the number of streaming services required to watch video content. See Todd Spangler, ‘Subscription Fatigue’: Nearly Half of U.S. Consumers Frustrated by Streaming Explosion, Study Finds, VARIETY (Mar. 18, 2019), <https://perma.cc/ZP93-LYSV> (“Nearly half (47%) of U.S. consumers say they’re frustrated by the growing number of subscriptions and services required to watch what they want . . .”). And 19 percent report subscribing to eight or more services every month. See John Glenday, *US Subscription Fatigue is Real, With Consumers Managing an Average of 5 Accounts*, DRUM (Nov. 16, 2022), <https://perma.cc/B2XG-RGDJ> (“With 19% coughing up for eight or more subscription services, the need for rationalization is becoming clear with 45% struggling to keep track of what they’ve signed up for and 35% in the dark about their total monthly spend.”).

12. See generally EVGENY MOROZOV, *TO SAVE EVERYTHING, CLICK HERE: THE FOLLY OF TECHNOLOGICAL SOLUTIONISM* (2013).

I. THE PROJECT OF DIGITAL OWNERSHIP

Legal commentators have been writing about digital ownership for nearly three decades.¹³ Their concerns were initially confined to virtual spaces, but it didn't take long for the question to migrate to the real world. Digital assets—whether we are talking about the real estate you acquired in the metaverse, gear you have crafted in your favorite video game, or the movies and ebooks you buy from digital retailers like Apple and Amazon—are the sorts of things consumers want and expect to own.¹⁴ You do not have to study Locke or Hegel to be persuaded by the notion that when you buy or build something, the law rightly ought to regard it as your own.¹⁵

Consumer expectations are an important consideration in the digital ownership debate, but there are other strong rationales for supporting clear, reliable personal property interests in digital assets. Property rules reduce information costs by simplifying transactional forms and limiting the creation of bespoke obligations.¹⁶ Although the law permits

13. See, e.g., Jennifer L. Mnookin, *Virtual(ly) Law: The Emergence of Law in LambdaMOO*, 2 J. COMPUT.-MEDIATED COMM'N 1 (1996) (illustrating how a multi-user dungeon openly accessible via the Internet fostered the development of a unique legal system); F. Gregory Lastowka & Dan Hunter, *The Laws of the Virtual Worlds*, 92 CALIF. L. REV. 1, 3 (2004) (exploring the history of virtual worlds, whether virtual objects can be considered legal property, and whether democracy and governance apply to social conflicts within virtual worlds); Joshua A.T. Fairfield, *Virtual Property*, 85 B.U. L. REV. 1047, 1064–69, 1089–1101 (2005) (addressing a new theory of virtual property, the relevance of the common law of property to cyberspace, and the challenges to the model of virtual property).

14. See Aaron Perzanowski & Chris Jay Hoofnagle, *What We Buy When We Buy Now*, 165 U. PA. L. REV. 315, 322 (2017) (“Our data demonstrate that a sizable percentage of consumers is misled with respect to the rights they acquire when they ‘buy’ digital media goods Not only are consumers misled, they are misled about ownership rights that are important to them.”).

15. See JOHN LOCKE, SECOND TREATISE OF GOVERNMENT § 27 (1690) (“The labour of his body, and the work of his hands, we may say, are properly his.”); see also GEORG WILHELM FRIEDRICH HEGEL, HEGEL'S PHILOSOPHY OF RIGHT § 44 (1820) (“A person has the right to direct his will upon any object The object thus becomes his.”).

16. See Tun-Jen Chiang, *Questioning Patent Alienability*, 57 HOUS. L. REV. 287, 287 (2019) (“The standard economic rationale for the alienability of property rights is that it facilitates the flow of resources to those who can put it to the most valuable use, or the ‘highest utility user.’”); Thomas W. Merrill

servitudes that limit the use of real property, personal property cannot typically be encumbered by restrictions or obligations that “run with” the asset.¹⁷ As a matter of property law, Tesla can’t sell me a car on the condition that I never drive it on Tuesdays or that I like all of Elon Musk’s tweets. If it could, would-be buyers—on both the new and secondary markets—would need to invest untold time and effort investigating whatever terms a capricious billionaire might have embedded in every product they come across. Instead, the *numerus clausus* principle ensures that the property rights conferred by a purchase are relatively straightforward and intuitive.¹⁸ This well-founded hostility towards chattel servitude dates back nearly half a millennium.¹⁹

Beyond information costs, property law embeds a strong preference in favor of alienability.²⁰ Restrictions that inhibit the transfer of property from one party to another, either directly or because of the fragmentation of rights across owners, are regarded with deep skepticism.²¹ If we want to encourage investment in assets and ensure that they can be directed to those who will put them to the most productive use, the restrictions on alienation that are now endemic to digital platforms pose a major worry.

& Henry E. Smith, *Optimal Standardization in the Law of Property: The Numerus Clausus Principle*, 110 YALE L.J. 1, 38–40 (2000) (describing the benefits of standardization of property rights).

17. See Molly Shaffer Van Houweling, *The New Servitudes*, 96 GEO. L.J. 885, 898–905, 914–16 (2008) (describing the law’s hostility to servitudes as applied to personal property interests).

18. See Merrill & Smith, *supra* note 16, at 10–11 (discussing that in common law courts, *numerus clausus* functions like a cannon of interpretation and is limited to previously recognized forms of property rights); see also Christina Mulligan, *A Numerus Clausus Principle for Intellectual Property*, 80 TENN. L. REV. 235, 235 (2013) (applying the *numerus clausus* principle to intellectual property regimes).

19. See *Kirtsaeng*, 568 U.S. at 528 (referencing Lord Coke to demonstrate that common law courts refused to impose restrictions on alienation of chattels as far back as the Fifteenth Century (citing Charles M. Gray, *Two Contributions to Coke Studies*, 72 U. CHI. L. REV. 1127, 1135 (2005))).

20. See Chiang, *supra* note 16, at 287 (explaining that the alienability of property rights is typically justified with the argument that “it facilitates the flow of resources to those who can put it to the most valuable use, or the ‘highest utility user’”).

21. See Merrill & Smith, *supra* note 16, at 24, 52 (noting the law’s distaste for restrictions on the alienability of property rights).

Despite these longstanding concerns about information costs and alienability, courts and other policymakers have shown a reluctance to recognize consumer property rights in digital assets. In part, this hesitance grows out of the fact that digital assets are often bound up with intellectual property rights—copyrights in particular. If the demands of the copyright holder are inconsistent with the priorities of the consumer, how are we to untangle that conflict? The answer from most contemporary courts has been to simply enforce the copyright holder's demands.²²

But historically, intellectual property law has relied on a very different approach to resolve these sorts of conflicts, one that evolved from the common law hostility to personal property servitudes. The exhaustion principle, which is reflected in copyright law's first sale doctrine, holds that once an IP rights holder sells a copy of a work or an embodiment of an invention, they lose the power to control its downstream use and disposition.²³ Exhaustion is why you can resell your car despite the patented technology built into it.²⁴ It is also why you can repair that car should it malfunction.²⁵ Exhaustion explains

22. See, e.g., *Vernor v. Autodesk, Inc.*, 621 F.3d 1102, 1103 (9th Cir. 2010) (rejecting the first sale defense); *Capitol Recs., LLC v. ReDigi Inc.*, 910 F.3d 649, 659 (2d Cir. 2018) (concluding that resale of digital files qualifies as copyright infringement); *Hachette Book Grp., Inc. v. Internet Archive*, No. 20-CV-4160, 2023 WL 2623787, at *1 (S.D.N.Y. Mar. 24, 2023) (finding copyright infringement where the defendant scanned copies of the plaintiff's books and lent digital copies to users); see also *Case C-263/18, Nederlands Uitgeversverbond & Groep Algemene Uitgevers v. Tom Kabinet*, ECLI:EU:C:2019:1111, ¶ 71 (Dec. 19, 2019) (finding that distribution of a second-hand e-book through a website requires the consent of the copyright holder). *But see* *Case C-128/11, UsedSoft GmbH v. Oracle Int'l Corp.*, ECLI:EU:C:2012:407, ¶ 89 (July 3, 2012) (holding that owners of software copyright could not prevent a perpetual licensee who has downloaded the software from selling the used license).

23. See generally PERZANOWSKI & SCHULTZ, *supra* note 5.

24. See *Impression Prod., Inc. v. Lexmark Int'l, Inc.*, 581 U.S. 360, 366 (2017) (explaining that when a patentee sells one of its products, they "can no longer control that item through the patent laws—its patent rights are said to 'exhaust.' The purchaser and all subsequent owners are free to use or resell the product just like any other item of personal property, without fear of an infringement lawsuit").

25. See generally AARON PERZANOWSKI, *THE RIGHT TO REPAIR: RECLAIMING THE THINGS WE OWN* (2022).

why you can shop at a used record store, give a video game to a friend, and borrow a book from your local library.²⁶ Without exhaustion, personal property disappears and our interactions with IP-encumbered works are dictated solely by the whims of rights holders.

As the Supreme Court has repeatedly recognized, exhaustion “is a common-law doctrine with an impeccable historic pedigree.”²⁷ It was first articulated in the mid-19th century by U.S. courts,²⁸ but its origins stretch back to the “refusal to permit restraints on the alienation of chattels,” a rule that stretches to the 15th century.²⁹ The exhaustion principle in contemporary IP law reflects the “hostility” and “enmity” with which the law regards efforts to attach post-sale restrictions on the use and disposition of personal property.³⁰ Such conditions are rightly regarded as “hateful to the law” and “obnoxious to the public interest.”³¹

Like the policy disfavoring servitudes on chattels from which it emanates, the exhaustion principle ensures alienability and reduces information costs. But in the context of expressive works, it does much more. As other scholars have outlined, exhaustion generally and the first sale doctrine in particular improve access to copyrighted works, aid in their preservation, and safeguard individual privacy.³² They also contribute to user

26. See generally PERZANOWSKI & SCHULTZ, *supra* note 5.

27. *Lexmark*, 581 U.S. at 371 (quoting *Kirtsaeng v. John Wiley & Sons, Inc.*, 568 U.S. 519, 538 (2013)).

28. See *Bloomer v. McQuewan*, 55 U.S. 539, 553–54 (1852) (holding that a sale of a patented item exhausts the patentee’s rights in that particular device); see also *Clemens v. Estes*, 22 F. 899, 900 (C.C.D. Mass. 1885) (holding that Mark Twain could not prevent book retailers from offering discounts on his books).

29. *Kirtsaeng v. John Wiley & Sons, Inc.*, 568 U.S. 519, 538 (2013).

30. See *Lexmark*, 581 U.S. at 371 (“Congress enacted and has repeatedly revised the Patent Act against the backdrop of the hostility toward restraints on alienation. That enmity is reflected in the exhaustion doctrine.”).

31. *Id.* (quoting *Straus v. Victor Talking Mach. Co.*, 243 U.S. 490, 501 (1917)).

32. See Joseph P. Liu, *Owning Digital Copies: Copyright Law and the Incidents of Copy Ownership*, 42 WM. & MARY L. REV. 1245, 1303, 1310–11, 1320–21, 1330–33, 1336 (2001) (describing the difficulty in balancing providing people access to copyrighted work with the incentive to innovate in the digital space); see also R. Anthony Reese, *The First Sale Doctrine in the Era of Digital Networks*, 44 B.C. L. REV. 577, 584 (2003) (arguing the system

innovation and platform competition.³³ More broadly, they foster individual autonomy with respect to the media and devices we interact with in our daily lives.³⁴

Regardless of these benefits, courts and other policymakers have proven reluctant to extend the exhaustion principle or the first sale doctrine to digital goods.³⁵ In large part, that reluctance stems from the narrow drafting of the Copyright Act, which limits the scope of the first sale doctrine to distribution of the particular copy a consumer owns.³⁶ As a matter of statutory construction, this language is a poor fit for digital exhaustion. Putting aside the futility of tracking specific copies in a technological environment that unavoidably generates reproductions as a matter of course, transferring a digital good typically requires the creation of an intermediate copy. Selling an ebook—whether the seller is Amazon or a consumer on a secondary market—almost always requires the creation of one or more copies, at least temporarily. A broader conception of exhaustion, and one consistent with its common law roots, could accommodate the creation of copies necessary to facilitate transfer so long as there is only one lawful owner at the end of the transaction.³⁷ Alternatively, the question could be reframed

of distributing copyright works through freely alienable, tangible copies has been beneficial for public access in three ways: access has become more affordable, there is continued availability of the works to the public, and the public can gain access to the works while maintaining “privacy or anonymity from the copyright owner”); *see generally* Julie E. Cohen, *A Right to Read Anonymously: A Closer Look at ‘Copyright Management’ in Cyberspace*, 28 CONN. L. REV. 981 (1996).

33. *See* Aaron Perzanowski & Jason Schultz, *Digital Exhaustion*, 58 UCLA L. REV. 889, 897–99 (2011) (stating that the first sale doctrine not only drives user innovation, but also drives competition between copyright owners in secondary markets).

34. *See generally* PERZANOWSKI & SCHULTZ, *supra* note 5.

35. *See, e.g.*, Reese, *supra* note 32, at 583 (explaining how the U.S. Copyright Office recommended a “wait and see” approach on whether to update the first sale doctrine to the developments in electronic commerce).

36. *See* 17 U.S.C. § 109.

37. *See* *Doan v. Am. Book Co.*, 105 F. 772, 776–77 (7th Cir. 1901) (permitting the distribution, reproduction, and modification of books for resale purposes); *see also* Perzanowski & Schultz, *supra* note 33, at 913–15 (discussing case law that distinguishes a secondhand owner’s right to restore a book to its original condition from outright reprinting of the book).

as one of fair use. In that context, courts have embraced intermediate copying when undertaken to achieve an otherwise lawful use, like reverse engineering or—as digital first sale advocates argue—transfers of ownership.³⁸ So far, courts have declined to follow these suggestions.³⁹

Courts and other policymakers often justify these narrow interpretations of the existing doctrine, in part, by pointing to the insufficiency of existing technology. After rejecting ReDigi's efforts to defend its online secondary market for lawfully acquired digital music, the Second Circuit held out some hope that others might develop copyright-compliant marketplaces for used digital goods.⁴⁰ After all, some “other technology may exist or be developed that could lawfully effectuate a digital first sale.”⁴¹ Nearly two decades earlier, the Copyright Office sounded a similar note when it recommended against a statutory expansion of the first sale doctrine.⁴² At the time, the debate centered on “forward-and-delete” technology that would have enabled one-to-one transfers of digital assets between consumers by automatically deleting the sender's file after transferring a copy to the recipient.⁴³ According to the Register of Copyrights, in the absence of evidence that this nascent technology was “viable” and “100 percent reliable,” there was no point in considering updating the first sale doctrine for the digital economy.⁴⁴

Forward-and-delete systems were the first of many proposed technological solutions to the worries posed over digital exhaustion. About a decade later, the Institute of

38. See *Sega Enter. Ltd. v. Accolade, Inc.*, 977 F.2d 1510, 1513 (9th Cir. 1992) (concluding that when a person disassembles a copyrighted computer program and has a legitimate reason to do so, it is a fair use of the work).

39. See *Capitol Recs., LLC v. ReDigi Inc.*, 910 F.3d 649, 651 (2d Cir. 2018) (finding infringement where digital files were resold); see also *Hachette Book Grp., Inc. v. Internet Archive*, No. 20-CV-4160, 2023 WL 2623787, at *45 (S.D.N.Y. Mar. 24, 2023) (rejecting the defendant's fair use defense).

40. See *ReDigi*, 910 F.3d at 659 (stating that technology may exist or be developed that could lawfully effectuate a digital first sale).

41. *Id.*

42. See U.S. COPYRIGHT OFF., *supra* note 4, at 47 (opposing the expansion of the first sale doctrine to digital copies).

43. See *id.* at 48 (discussing the arguments relating to “forward and delete” technology).

44. *Id.* at 83–84.

Electrical and Electronics Engineers (“IEEE”) formed a working group to develop a standard for “consumer-ownable digital personal property” (“DPP”).⁴⁵ Around the same time, Amazon patented a “secondary market for digital objects.”⁴⁶ It called for storing ebooks, audio, video, and applications in the cloud, where access could be seamlessly transferred to a third party.⁴⁷ Apple filed its own patent for a method of “managing access to digital content items.”⁴⁸ It envisioned maintaining records of “which user currently has access to the digital content.”⁴⁹ After a transfer, the original purchaser would be “prevented from accessing the digital content.”⁵⁰ Not long after that, ReDigi patented its system “for sharing, transferring and removing previously owned digital media.”⁵¹ In the wake of these efforts came the blockchain, the latest in a long line of largely theoretical technological solutions to the problem of digital first sale.

II. THE FAILED PROMISE OF BLOCKCHAIN SOLUTIONS

For those interested in the development of meaningful property interests in digital assets, the blockchain offered three potential benefits. First, it could help attract significant financial resources to the development and maintenance of digital secondary marketplaces.⁵² Second, it could demonstrate the unmet market demand for lawfully transferable digital

45. Paul Sweazey, *Toward Consumer-Ownable Digital Personal Property: An Emerging Standard*, 1 INST. ELEC. & ELECS. ENG’RS CONSUMER ELECS. MAG. 34, 34 (Jan. 2012).

46. U.S. Patent No. 8,364,595 (filed May 5, 2009) (issued Jan. 29, 2013).

47. *Id.*

48. U.S. Patent No. 20,130,060,616 (filed Sept. 6, 2011).

49. *Id.*

50. *Id.*

51. U.S. Patent No. 8,627,500 (filed Dec. 31, 2010); *see also* U.S. Patent No. 8,631,505 (filed Mar. 16, 2013); U.S. Patent No. 8,359,246 (filed Mar. 19, 2010); U.S. Patent No. 10,338,827 (filed Apr. 15, 2016); U.S. Patent No. 10,635,328.

52. *See* PERZANOWSKI & SCHULTZ, *supra* note 5, at 189 (“[T]he block chain costs very little to maintain, but is highly resistant to manipulation.”).

goods.⁵³ And third, it offered a plausible technological response to rights holders' fears of runaway infringement.⁵⁴ Ultimately, none of those benefits materialized to any appreciable degree. And worse, failed and fraudulent blockchain projects left many consumers reasonably convinced that the notion of digital property was a fad, if not simply a scam.

Given consistent copyright holder opposition, establishing anything approaching consumer property rights in digital assets requires significant financial outlays and legal risk. Building out a digital marketplace is not an inexpensive proposition.⁵⁵ But more importantly, such a marketplace must either entice copyright holders to make their works available willingly or convince Congress or the courts that digital resale ought to be lawful regardless of copyright holder buy-in.

In the blockchain space, there seemed to be plenty of money to go around. Venture capital investments in blockchain firms totaled less than \$1 billion in 2017.⁵⁶ By 2021, that number had skyrocketed to more \$25 billion.⁵⁷ Not surprisingly, much of that funding was directed to cryptocurrency exchanges and other firms focused on speculative financial instruments.⁵⁸ A smaller, but still significant, pile of cash was dumped on non-fungible token ("NFT") projects, which are the closest analog—but an

53. See *id.* at 190 (providing that the blockchain serves as an up-to-date record of digital transactions and can help ensure that digital assets are not fraudulently transferred).

54. *Id.*

55. See *id.* at 191 (explaining that adding a block, or a bundle of electronic transactions, to the block chain "requires a significant investment of resources").

56. Molly J. Zuckerman, *VC Investment in Blockchain Companies on Track to Exceed 2017's Numbers*, COINTELEGRAPH (Mar. 4, 2018), <https://perma.cc/9DD3-BEJW>.

57. Michael Bellusci, *Global VC Funding for Blockchain Firms Surged to Record \$25B in 2021: CB Insights*, COINDESK, <https://perma.cc/F6P4-CJ52> (last updated May 11, 2023). Notably, after the spectacular collapse of FTX, investments plunged. See Hannah Miller, *Crypto Startup Funding Falls to Lowest Level in Almost Two Years*, BLOOMBERG (Jan. 9, 2023), <https://perma.cc/E55L-GP5V> ("Venture capital investment in the industry plunged to its lowest level in almost two years during the fourth quarter of 2022 . . .").

58. See Bellusci, *supra* note 57 ("Funding for blockchain startups accounted for 4% of global venture dollars, up from 1% in 2020.").

imperfect one—to digital property in the blockchain sphere.⁵⁹ But here too, those resources were disproportionately directed to speculation. Rather than building markets for the exchange of mundane, workaday digital assets like songs, books, and movies that purchasers might actually use and enjoy, unconscionable sums were spent on digital baubles with no practical value aside from the chance that a bigger fool with deeper pockets might one day take them off your hands. NFT sales topped \$25 billion in 2021.⁶⁰ More than \$2 billion has been spent on Bored Apes alone.⁶¹ And entrepreneur Vignesh Sundaresan relieved himself of nearly \$70 million to buy a single NFT tied to a digital collage.⁶² Rather than creating a digital version of the used record store, the blockchain has so far only managed to reproduce the most speculative and irrational aspects of the art market, stripping away any pretense of good taste in the process.⁶³

Nor has the blockchain done much to provide commercial proof of consumers' unmet desire for genuine digital ownership.

59. See generally Joshua A.T. Fairfield, *Tokenized: The Law of Non-Fungible Tokens and Unique Digital Property*, 97 IND. L.J. 1261 (2022) [hereinafter *Tokenized*]. Some musicians have released music ostensibly using the blockchain. But those examples typically do not entail ownership of digital files. Instead, tokens effectively serve as digital coupons that can be redeemed for physical copies of recordings. Samantha Hissong, *Kings of Leon Will Be the First Band to Release an Album as an NFT*, ROLLING STONE (Mar. 3, 2021), <https://perma.cc/BTZ3-G6XS>.

60. Elizabeth Howcroft, *NFT Sale Hit \$25 Billion in 2021, but Growth Shows Signs of Slowing*, REUTERS (Jan. 11, 2021), <https://perma.cc/S5L4-QET4>.

61. Raphael Minter, *Bored Ape Yacht Club Surpasses \$2 Billion in All-Time Sales*, BEINCRYPTO (May 5, 2022), <https://perma.cc/ZT5D-MPEY>.

62. Robert Frank, *Crypto Investor Who Bought Beeple's NFT for \$69 Million Says He Would Have Paid Even More*, CNBC (Mar. 30, 2021), <https://perma.cc/QED7-Z94M>; see also Thomas Haley, *Embracing Digital*, 101 N.C. L. REV. 619, 653–60 (2023) (describing the tenuous connection between the original artwork and the NFT).

63. There is a complementary explanation for some of this behavior. As Brian Frye explains, NFT transactions, like fine art purchases before them, are often driven by a desire for clout—the attention and notoriety derived from being associated with a well-known and, crucially, obscenely expensive purchase. See Brian L. Frye, *After Copyright: Punning NFTs in a Clout Economy*, 45 COLUM. J.L. & ARTS 341, 347–50 (2022) (discussing the role of clout in the fine art and NFT markets).

In the streaming era, there is a growing sense that owning things is an exercise in performative nostalgia.⁶⁴ If temporary, conditional access to a large—if woefully incomplete—catalog of music or video content is sufficiently cheap and convenient, why would anyone want to actually own anything?⁶⁵ We see evidence to the contrary in the resurgence of vinyl and cassettes.⁶⁶ But proof that this desire translates at scale to the digital marketplace is important for getting policymakers to pay attention. We have solid evidence that consumer expectations about ownership persist in the digital marketplace.⁶⁷ And companies like Apple and Amazon that use the language of property to peddle content licenses to consumers are, at long last, facing potential liability for false and deceptive advertising.⁶⁸ But without a marketplace that actually offers

64. See Mike Butcher, *As Netflix Pivots, American Attitudes Shift to Owning Digital Assets, Not Just Streaming Them*, TECHCRUNCH (July 14, 2022), <https://perma.cc/45WB-PNR4> (discussing the reasons for why more and more individuals are shifting away from streaming towards digital ownership).

65. One important reason, though hardly the only one, is that content frequently disappears from these platforms. See PERZANOWSKI & SCHULTZ, *supra* note 5, at 9, 43, 172 (noting the risk of disappearing content on digital platforms); see also Mark A. Lemley, *Disappearing Content*, 101 B.U. L. REV. 1255, 1262–65 (2021) (examining the disappearance act of content on streaming platforms).

66. See Kaitlyn Radde, *Vinyl Records Outsell CDs for the First Time Since 1987*, NPR (Mar. 10, 2023), <https://perma.cc/AP4F-AZDU> (“Streaming is still the biggest driver of the music industry’s growth . . . but physical music formats saw a remarkable resurgence in the past couple of years.”); see also Keith Caulfield, *U.S. Cassette Tape Album Sales Grew 28% in 2022*, BILLBOARD (Jan. 11, 2023), <https://perma.cc/KPH9-UEWG> (reporting on the resurgence of cassette tape album sales in 2022).

67. See Perzanowski & Hoofnagle, *supra* note 14, at 335 (finding consumers continue to expect that they “acquire the same sort of rights to use and transfer digital media goods that they acquire when they purchase physical goods”).

68. See Eriq Gardner, *Apple Must Face Lawsuit for Telling Consumers They Can “Buy” Movies, TV Shows*, HOLLYWOOD REP. (Apr. 22, 2021), <https://perma.cc/XXG8-FKV9> (reporting on the pending class action lawsuit against Apple over the way consumers can “buy” or “rent” content in the iTunes store); see also Julie Steinberg, *Apple Faces Deception Lawsuit Over Purchased iTunes Content*, BLOOMBERG (Mar. 22, 2023), <https://perma.cc/WV7M-B668> (reporting on the status of pending class actions against Apple and Amazon).

digital ownership, we are forced to resort to counterfactuals and hypotheticals.

The blockchain holds out the promise, thus far illusory, of genuine property interests. Many NFT projects are self-described in the language of ownership.⁶⁹ They expressly offer “true ownership of digital assets” that are “100% owned by you” and are “just like owning a physical artwork.”⁷⁰ But despite the rhetoric, these claims are typically no more accurate than Apple’s enticement to “Buy Now.”⁷¹ As Josh Fairfield has documented, the majority of NFT projects do not provide anything a reasonable person would call ownership.⁷² In most instances, an NFT does not contain the underlying expressive work.⁷³ The image or video clip is stored on a remote server, and the NFT simply points to its location.⁷⁴ That means the asset you “own” might be swapped out for another one or disappear altogether.

Moreover, NFTs are often encumbered with precisely the sorts of restrictions that property law rejects when it comes to personal property. Token creators can “pause” transfers, effectively exercising control over alienation.⁷⁵ They can insist on resale royalties, entitling them to a percentage of every downstream transfer of an asset.⁷⁶ And creators have imposed

69. See *Tokenized*, *supra* note 59, at 1279 n.91 (showcasing several examples of NFT projects self-described in the language of ownership).

70. *Id.*

71. See *id.* at 1279 (“NFTs are sold on a promise similar to the promise one receives when buying a physical object. . . . But after examining the underlying technology, those representations are not precisely true.”).

72. See *id.* at 1278–82 (examining the features of NFT projects that are not characteristic of ownership); see also Haley, *supra* note 62, at 653–60 (analyzing the features and uses of NFTs).

73. See *Tokenized*, *supra* note 59, at 1296 (explaining the distinction between the NFT and the underlying work).

74. See *id.* at 1272 (emphasizing that NFTs merely contain a direction to the location of a file not the actual file itself). SuperRare is an exception to this general rule. See *id.* at 1275 (“With SuperRare, the art is in the token itself, so when someone buys a token, the art will continue to exist even after someone has stopped maintaining the external server.”).

75. See *id.* at 1280 (discussing the ability to code tokens to be “pausable”).

76. Some states have attempted to create similar structures for sales of physical art, but they have been deemed preempted. See *Close v. Sotheby’s, Inc.*, 894 F.3d 1061, 1072 (9th Cir. 2018) (finding the California Resale

caps on the income purchasers can derive from the NFTs they supposedly own.⁷⁷ Even the use of an NFT is governed by copyright license terms dictated by the seller.⁷⁸ Without reliable rights to transfer, use, or even possess these assets, NFT buyers essentially are paying for a receipt that corresponds to an asset under someone else's control.⁷⁹ That is not "ownership" in any reasonable construction of the term.⁸⁰ But "on-chain servitudes" makes for less attractive sloganeering.

Finally, there was some reason to hope that the blockchain could provide a technological infrastructure for tracking transactions and ownership of digital assets.⁸¹ One of the recurring worries of copyright holders is that if we allow the transfer of digital goods, consumers will game the system and engage in widespread piracy under the guise of lending or resale.⁸² If the costs of copying and distribution are low enough, we might assume that bad actors will send copies of the new ebook they bought to all of their friends and online

Royalties Act, which granted artists an unwaivable right to royalties from the sale of their artwork, preempted under the 1976 Copyright Act).

77. See *Tokenized*, *supra* note 59, at 1298 ("[P]urchasers of an NFT are often not permitted to commercially benefit from their purchase or are limited in their ability to benefit to a set dollar figure.").

78. See *id.* at 1284 ("IP agreements range from not allowing owners to use the NFT in personal branding or advertising to restricting the marketplace in which someone can trade their NFT.").

79. See *id.* at 1278–79 ("[T]he technological implementation of NFTs leaves room for those who sell NFTs to exert lingering control over a fully bought and paid for asset."). The art world has dealt in even more attenuated receipts for decades. See Jane Recker, *Anonymous Buyer Pays Over \$1 Million for a Piece of Invisible Art*, SMITHSONIAN (Apr. 12, 2022), <https://perma.cc/VB2U-MY59> (describing how between 1959 and 1962, Yves Klein sold receipts for invisible "zones" and accepted payment in gold).

80. See *Tokenized*, *supra* note 59, at 1279–82 (describing how purchasers of NFTs do not possess all the property rights over their NFTs that are traditionally associated with ownership of personal property).

81. See PERZANOWSKI & SCHULTZ, *supra* note 5, at 177–80 (arguing that ownership of any product, digital or physical, occurs when a one-time payment is made accompanied by a transfer of possession).

82. See Garry Gabison, *Policy Considerations for the Blockchain Technology Public and Private Applications*, 19 SMU SCI. & TECH. L. REV. 327, 329 (2016) ("[C]opyright infringement may increase if data recording moves from the current centralized systems to a distributed blockchain system.").

acquaintances, under the false cover of digital first sale.⁸³ This risk, for reasons described in the next Part, is wildly overstated.⁸⁴ But to the extent it presents a genuine concern, or even a perceived one, the blockchain could help address it.⁸⁵ If we have a reliable, low-cost, public record of transactions, we can identify who owns a given instance of a work at any particular time.⁸⁶ With that information, we can distinguish between genuine resale and acts of infringement masquerading as lawful transfers.⁸⁷ The blockchain is by no means the only, or even the most efficient, way to track that information.⁸⁸ But it did offer a mechanism to track ownership that was accessible outside of the confines of any particular digital retailer's private servers.⁸⁹

Technological capabilities aside, the blockchain's reputation as a reliable and trustworthy arbiter of transactions has taken a severe beating in recent years.⁹⁰ The spectacular collapse of FTX resulted in roughly \$8 billion of customer assets

83. See Haley, *supra* note 62, at 629 (“[T]here is no acceptable way to operationalize a system that could support digital first sale without eviscerating the market for digital works.”).

84. See *infra* Part III.

85. See Nikolei M. Kaplanov, *Nerdy Money: Bitcoin, the Private Digital Currency, and the Case Against Its Regulation*, 25 LOY. CONSUMER L. REV. 111, 118 (2012) (arguing that one of the benefits of the blockchain is its ability to solve the double-spending problem).

86. See *id.* at 116–19 (explaining that all transactions on blockchain technologies are recorded on a public ledger).

87. See *id.* at 117 (explaining that public-key encryption secures online transactions).

88. Among other concerns, blockchain technologies continue to produce the predictable environmental harms of massive electricity consumption. See *generally* WHITE HOUSE OFF. OF SCI. & TECH. POL’Y, CLIMATE AND ENERGY IMPLICATIONS OF CRYPTO-ASSETS IN THE UNITED STATES 14 (2022) (“Total global estimated electricity usage for blockchains that support crypto-assets in 2022 falls into a range of 120 to 240 billion kWh per year. This is equivalent to 0.4% to 0.9% of annual global electricity usage.”).

89. See Kaplanov, *supra* note 85, at 116 (“In order to spend and accept bitcoins, all transactions must be logged on a public ledger.”).

90. See Mike Orcutt, *Once Hailed as Unhackable, Blockchains Are Now Getting Hacked*, MIT TECH. REV. (Feb. 19, 2019), <https://perma.cc/F77X-YUYB> (explaining that a hacker gained control of more than half of Coinbase’s computing power in Ethereum Classic and used it to rewrite the transaction history).

seemingly going up in smoke.⁹¹ Other high-profile losses, ranging from Mt. Gox⁹² to Seth Green's stolen ape,⁹³ contribute to the sense that the blockchain cannot insulate marketplaces from illegal behavior.⁹⁴

Indeed, many critics argue that illegal activity is one of the primary use cases for the blockchain.⁹⁵ The sale of NFTs seems ideally designed for money laundering.⁹⁶ An epidemic of rug-pulling and pump-and-dumps have demonstrated that the blockchain is not immune to the sort of scams we find in the off-chain investment world.⁹⁷ And many blockchain projects, from NFTs to cryptocurrencies, share a strong familial

91. See Dietrich Knauth & Tom Hals, *Failed Crypto Exchange FTX Has Recovered Over \$5 Bln, Attorney Says*, REUTERS (Jan. 11, 2023), <https://perma.cc/9MWS-796L> (“The U.S. Commodities Futures Trading Commission has estimated missing customer funds at more than \$8 billion.”).

92. See Robert McMillan, *The Inside Story of Mt. Gox, Bitcoin's \$460 Million Disaster*, WIRED (Mar. 3, 2014), <https://perma.cc/QBJ3-W6GN> (“Tokyo-based bitcoin exchange Mt. Gox filed for bankruptcy last week, saying hackers had stolen the equivalent of \$460 million from its online coffers.”).

93. See Christian Zilko, *Seth Green Pays \$260,000 to Recover Lost NFT That Inspired His New TV Show*, INDIE WIRE (June 12, 2022), <https://perma.cc/94MC-EMLJ> (“Green, a passionate collector of non-fungible tokens, has had quite the month. He recently lost several of his NFTs in a phishing-related incident, which equated to hundreds of thousands of dollars of lost wealth.”).

94. See *id.* (explaining that Seth Green had to pay \$260,000 in order to buy back his stolen NFTs).

95. See Nathaniel Popper, *Bitcoin Has Lost Steam. But Criminals Still Love It.*, N.Y. TIMES (Jan. 28, 2020), <https://perma.cc/T6ZU-DE4M> (discussing the growing use of cryptocurrency in illegal activity).

96. See Allison Owen & Isabella Chase, *NFTs: A New Frontier for Money Laundering?*, ROYAL UNITED SERVS. INST. (Dec. 2, 2021), <https://perma.cc/9H6D-CA36> (“Along with the risks stemming from cryptocurrency usage, money launderers can exploit the trade and sale of NFTs in a similar way to which they exploit physical art.”).

97. See, e.g., Marco Quiroz-Gutierrez, *Logan Paul Sued for Alleged CryptoZoo 'Rug Pull'*, FORTUNE (Feb. 3, 2023), <https://perma.cc/2X4R-PNY3> (describing a class action lawsuit against Logan Paul for cheating investors in his Web3 game); see also Mary Ellen Cagnassola, *Crypto Fraudsters Made \$30 Million Last Year Off 'Pump and Dump' Schemes: Report*, MONEY (Feb. 21, 2023), <https://perma.cc/3P8C-6MC6> (“Almost a quarter of new cryptocurrencies that were launched on Ethereum and BNB blockchains last year and evaluated in a new study had the hallmarks of artificially inflated assets.”).

resemblance to classic Ponzi schemes.⁹⁸ They rely on the influx of new money to keep early investors happy, and happily hyping the upsides of the scheme to new marks—I mean, investors.⁹⁹ And the blockchain itself, a much-touted but not particularly well understood technology, functions as an ideal “grey box”—Arthur Leff’s term for the investment proposition at the heart of any Ponzi scheme, which is simultaneously disclosed but shrouded in layers of obfuscation.¹⁰⁰ But unlike the typical Ponzi scheme, which requires actually paying initial investors in cash, blockchain schemes can rely on the “hodl” brain contagion to avoid payouts of real money.¹⁰¹

In short, the blockchain failed to live up to the hype. Unfortunately, that fact has delivered a black eye to the notion of property interests in digital assets.¹⁰² But beyond this tarnished public image, the shortcomings of the blockchain tell us very little about whether and how to resolve the question of digital ownership.¹⁰³

III. THE INDISPENSABILITY OF LAW

Digital ownership does not require the blockchain or any other software-based solution.¹⁰⁴ It never has. Instead, it requires a shift in legal categories, not a change in technology.¹⁰⁵ Digital ownership is a technology-agnostic legal theory that recognizes limited property interests held by purchasers of

98. See Matt Levine, *The Crypto Story*, BLOOMBERG (Oct. 25, 2022), <https://perma.cc/GBH9-FCCS> (“[E]very web3 project is simultaneously a Ponzi.”).

99. See *id.* (comparing cryptocurrencies to Ponzi schemes).

100. Chris J. Hoofnagle, *The TechCons: Revisiting Arthur Leff’s Swindling and Selling* (on file with author), <https://perma.cc/5CJQ-VQ29> (discussing ARTHUR A. LEFF, *SWINDLING AND SELLING* (1976)).

101. Hoa Nguyen, *The History of HODL*, COINDESK (Feb. 2, 2019), <https://perma.cc/9T45-H46P>.

102. See *supra* notes 60–68 and accompanying text.

103. See *infra* Part III.

104. See PERZANOWSKI & SCHULTZ *supra* note 5, at 57–83 (explaining how notions of ownership have shifted in the digital marketplace).

105. See *id.* at 25–26 (arguing that the principle of exhaustion would allow anyone who buys a product incorporating IP to resell it without the permission of the publisher or manufacturer).

digital goods.¹⁰⁶ There has never been anything approaching an “inevitable marriage” between NFTs and digital first sale.¹⁰⁷

Nonetheless we have seen both sides of the digital ownership debate lapse into techno-solutionist framings.¹⁰⁸ Despite the wide-eyed proclamations of crypto-evangelists, the blockchain will not magically give rise to a world of digital personal property.¹⁰⁹ Although they reach the opposite conclusion, critics of digital ownership can fall into the same trap. Thomas Haley, for example, argues we should stop looking backward at the “regressive” and bygone era of ownership.¹¹⁰ Instead, we should embrace the frictionless future of subscription access to our culture, or at least the part of it that finds its way onto streaming services.¹¹¹ The blockchain is incapable of creating truly unique and authentic digital goods, he argues.¹¹² If that is true, digital ownership forces us to choose between “eviscerating the market for digital works” and “imposing technical restrictions . . . that would prove

106. *See id.* at 1–15 (explaining how digital consumers have limited property interests in their digital purchases).

107. Haley, *supra* note 62, at 623.

108. *See id.* at 676 (arguing against treating digital goods like physical goods, in part because the blockchain cannot create truly unique digital goods).

109. *See* João Marinotti, *Can You Truly Own Anything in the Metaverse? A Law Professor Explains How Blockchains and NFTs Don't Protect Virtual Property*, CONVERSATION (Apr. 21, 2022), <https://perma.cc/TEU7-64JP> (“The prevailing but legally problematic narrative among crypto enthusiasts is that NFTs allow true ownership of digital items in the metaverse Despite these claims, the legal status of virtual ‘owners’ is significantly more complicated.”).

110. Haley, *supra* note 62, at 634.

111. *See id.* at 634–36 (arguing that streaming services offer the consumer “far greater value than before the era of digital distribution”). Digital libraries are woefully incomplete and run the risk of essentially erasing wide swaths of our cultural output. Films directed by the likes of David Lynch, Spike Lee, James Cameron, and Alfred Hitchcock are simply unavailable online. *See* Chris Morgan, *Popular Movies That Aren't Available to Stream Anywhere*, YARDBARKER, <https://perma.cc/B4N5-XR3N> (last updated July 30, 2023) (listing popular movies that are unavailable to stream online). Even a service’s own exclusive content may be unceremoniously binned. *See* Savannah Salazar & Eric Vilas-Boas, *HBO Max Is Still Taking Stuff Down Without Warning*, VULTURE, <https://perma.cc/D4LG-C8Y7> (last updated Dec. 14, 2022) (listing movies and shows HBO Max removed from its own streaming service).

112. *See* Haley, *supra* note 62, at 654 (“[T]he idea that an NFT is unique in the sense of an individual, authentic piece of art is untrue even if one is inclined to stretch the term to include resources linked in the NFT.”).

unacceptable” to consumers.¹¹³ Not only is this a false choice, neither horn of this supposed dilemma reflects reality.

Consider the claim that digital ownership is doomed because consumers would never countenance the sort of DRM necessary to prevent infringement.¹¹⁴ First, as discussed below, no DRM system is necessary to implement a digital exhaustion regime.¹¹⁵ But putting that aside, the insistence that the market would reject DRM because it is too inconvenient and time-consuming is belied by reality. Outdated, clunky DRM systems are indeed cumbersome. And if they all were, we might reasonably predict an uproar from consumers.¹¹⁶ But many DRM systems, their many other flaws notwithstanding, operate seamlessly. All of the major streaming platforms—the ones Haley argues obviate any need for digital ownership—are built around DRM.¹¹⁷ Between Spotify, Apple Music, Netflix, and the like, consumers access DRM-protected content billions of times per day without much complaint.¹¹⁸ Consumers don’t object to DRM because of transaction costs. They object when DRM limits their ability to make the uses they expect of the content they acquire lawfully.¹¹⁹ A future without digital ownership is hardly

113. *Id.* at 629.

114. *See id.* at 630 (“[T]o engender confidence that users, empowered by law to alienate their digital libraries, will not retain additional copies of works would require DRM to be far more draconian than most would tolerate, let alone desire.”).

115. *See infra* notes 119–126 and accompanying text.

116. *See* Haley, *supra* note 62, at 630 (explaining that DRM systems may be “far more draconian than most would tolerate”).

117. *See* Vishal Sharma, *DRM Platforms Importance & Implementation Guide for Video Production*, VDOCIPHER (Sept. 6, 2022), <https://perma.cc/WK4Z-SY2F> (“For audiovisual content, the big platforms that distribute and monetize this content are Netflix, Amazon, Apple, and Google. These platforms use or have developed their own DRM platforms and encryption systems to control and manage their content.”).

118. *See* Chris Brook, *What Is DRM Protected Content? Definition, How It Works & More*, FORTRA (May 8, 2023), <https://perma.cc/B4KM-WRVF> (explaining how “[o]n the user’s end, it all happens seamlessly”).

119. *See, e.g.*, Timothy Geigner, *DRM Breaking Games Again, This Time Due to New Intel Chip Architecture*, TECHDIRT (Nov. 11, 2021), <https://perma.cc/GB9W-XBNP> (detailing how Intel’s new Chip Architecture resulted in the disruption of the DRM system, preventing users from playing games that they had already purchased).

a future without DRM. Indeed, it is a future in which DRM is pervasive.

Haley argues that advocating for digital first sale is irreconcilably inconsistent with criticism of DRM systems.¹²⁰ Since in his view “draconian DRM is the *sine qua non* of any possible digital first-sale regime,” one cannot both critique DRM and embrace property rights in digital assets.¹²¹ I disagree. There is no “fundamental tension” in calling out DRM when it harms consumers but tolerating it when it offers consumers more freedom and control over the things they own.¹²² How we use technologies, what goals they are designed to achieve, and how they interact with our legal rights ought to influence our assessment of them. When the Internet Archive relies on DRM to support its controlled digital lending program, for example, we ought to acknowledge that as a reasonable compromise even if DRM is more often adopted to erode consumer rights.¹²³

In the absence of DRM that simultaneously poses no inconvenience to consumers while perfectly protecting against infringement, Haley predicts that digital first sale would “eviscerat[e]” the market for digital media.¹²⁴ In his view, consumers will resell the same piece of content over and over again, denying copyright holders the necessary returns on their creative investments.¹²⁵ He offers no evidence for this assertion, but the primary flaw in this argument is that it ignores the existence of law.

120. See Haley, *supra* note 62, at 629 (arguing that digital first sale requires DRM to ensure that the seller of the copy gives up his own copy).

121. Of course, DRM is, if anything, more integral to the streaming services than favor over ownership. Haley, *supra* note 62, at 629.

122. See *id.* (arguing that there is a fundamental tension between digital first-sale doctrine and DRM).

123. Regardless of its use, some DRM strategies can open consumers to security and privacy risks. See Deirdre Mulligan & Aaron Perzanowski, *The Magnificence of the Disaster: Reconstructing the Sony BMG Rootkit Incident*, 22 BERKELEY TECH. L.J. 1157, 1158 (2007) (describing how Sony BMG sold CDs that installed a software tool that compromised the security of consumer’s computers).

124. Haley, *supra* note 62, at 629.

125. See *id.* at 629–30 (positing that “because digital files may be reproduced endlessly and perfectly, the system need be broken only once for any given work for versions of that work unencumbered by DRM to proliferate across the internet”).

Every song, book, and movie that would be available on secondary markets in a world that recognizes digital ownership is available for free on the internet in the world we actually occupy.¹²⁶ And if a release isn't already freely downloadable, it is trivially simple to make it available.¹²⁷ Despite that fact, copyright holders continue to derive significant revenue from those works.¹²⁸ So what is stopping people from indiscriminately sharing and downloading every digital item in their collection? The answer is not DRM.

As it turns out, we've already built and successfully deployed a technology that can reliably create artificial excludability. It's called copyright law.¹²⁹ If you believe in the basic premise of copyright exclusivity, you've already conceded that law constrains consumer behavior. That's no less true when it comes to the contours of the first sale doctrine than the creation of exclusive rights. A claim that legal rules are toothless in the absence of perfect technological control is an argument for the futility of copyright law altogether.

The first sale doctrine is an affirmative defense to infringement.¹³⁰ So a reseller would bear the burden of proving that they are not serially transferring copies of the same work

126. See Damjan Jugovic Spajic, *Piracy Is Back: Piracy Statistics for 2023*, DATAPRO (May 5, 2023), <https://perma.cc/TC4U-Z7LE> (detailing the ubiquity of piracy).

127. See *Help Key: The Essential Guide to Piracy*, TECHCRUNCH (May 14, 2007), <https://perma.cc/Z8QW-NKE4> (describing how easily digital content can be infringed).

128. See, e.g., Jem Aswad, *U.S. Recorded Music Revenue Scores All-Time High of \$15.9 Billion in 2022, Per RIAA Report*, VARIETY (Mar. 9, 2023), <https://perma.cc/UG6K-TSTK> (explaining how 2022 was a record year for music industry revenue).

129. See 17 U.S.C. §§ 101–805, 1001–1205.

130. See *Vernor v. Autodesk, Inc.*, 621 F.3d 1102, 1107 (9th Cir. 2010) (“The exclusive distribution right is limited by the first sale doctrine, an affirmative defense to copyright infringement that allows owners of copies of copyrighted works to resell those copies.”). Fair use, while not best considered an affirmative defense, is another option for establishing the legality of transfers of digital assets. See generally Lydia P. Loren, *Fair Use: An Affirmative Defense?*, 90 WASH. L. REV. 685 (2015). Courts, however, have not been receptive to this fair use argument so far. See *Capitol Recs., LLC v. ReDigi Inc.*, 910 F.3d 649 (2d Cir. 2018) (rejecting fair use as an affirmative defense); *Hachette Book Grp., Inc. v. Internet Archive*, No. 20-CV-4160, 2023 WL 2623787 (S.D.N.Y. Mar. 24, 2023) (same).

or retaining copies after a purported sale. Far from being “legitimized,” the indiscriminate transfer of copies would be plainly infringing.¹³¹ Would copyright holders be forced to bring lawsuits to enforce their rights? Perhaps. But that’s the basic enforcement structure copyright law has always provided.¹³² And given copyright’s indirect liability standards, we would expect platforms that facilitate lawful digital transfers to take seriously the risk of infringement. With a legal framework in place that permits but polices digital resale, firms would have stronger incentives to build tools to distinguish the first-sale sheep from the infringing wolves.

There’s little reason to believe that digital ownership would spell the collapse of the entertainment industry as we know it. Copyright holders have made similarly dire claims before, but their track record has proven far from accurate.¹³³ And long before the emergence of digital distribution, those same industries fought a persistent, if largely unsuccessful, series of battles against consumer property rights.¹³⁴ Nonetheless, those industries continue to thrive in the face of competition from secondary markets.¹³⁵

In the end, the primary stumbling block to digital ownership is not a gap in technology or an exploit in the economics of the digital media marketplace, it is the failure of

131. See Haley, *supra* note 62, at 629 (arguing that selling of digital copies would legitimize transferring a copy “without giving up one’s own”).

132. Copyright holders have perhaps gotten used to a world in which they can rely on technological controls, filtering systems, and third-party platforms to handle the bulk of their enforcement needs. See *generally* 17 U.S.C. §§ 512, 1201. But absolving rights holders of any obligation to enforce their rights through the judicial process should not be the goal of the copyright system. In any case, the new Copyright Small Claims Board could offer a low-cost alternative to litigation targeting accused infringers on secondary markets. *Id.* § 1502.

133. See Mark A. Lemley, *Is the Sky Falling on the Content Industries?*, 9 J. TELECOMM. & HIGH TECH. L. 125, 125–35 (2011) (detailing the history of copyright holders arguing that new developments mark the end of their respective industries).

134. See *supra* note 10 and accompanying text.

135. To be sure, thriving publishers and studios do not necessarily translate to fair compensation for creators. But that disconnect is less a problem with the copyright system than a byproduct of concentrated power within these industries. See *generally* CORY DOCTOROW & REBECCA GIBLIN, CHOKEPOINT CAPITALISM (2022) (detailing how big tech and big content captured creative labor markets and profited more than is reasonable).

our legal system to update its categorization of property interests. If we can build an effective system of intellectual property rights out of nothing more than legal code, we can use the same tools to construct a system of personal property interests in digital assets.

CONCLUSION

The overstated promises and high-profile failures of the blockchain have not done any favors for the project of digital ownership. They've distracted from the goal of secondary markets for useful, everyday digital assets by shining a spotlight on speculative trivialities. And they've further soured the public on false claims of ownership. But the blockchain was never necessary for digital ownership. So, its failures do not doom the broader goal of updating personal property law for the digital economy.

Despite the many valid critiques of the blockchain, copyright holders and policymakers are ultimately to blame for their failure to embrace digital exhaustion. Copyright holders have been on a mission to erode and ultimately dismantle the first sale doctrine, secondary markets, and the fundamental notion of personal property rights in media purchases for more than a century. The shift to digital distribution was just the latest in a long line of pretenses. The difference is that, so far, courts and other policymakers have failed to push back on that overreaching. That's not a problem software can solve.