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The Consumer Bundle

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THE CONSUMER BUNDLE

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Abstract: Can property law have a consumer protection purpose? One of the most important consumer law concerns today is the limited control consumers have over the digital assets and software-embedded products they purchase. Current proposals for reform focus on classifying the transaction as either license or sale and rely mostly on contract law and consumer protection regulation with a few calls for restoring ownership rights. This Article argues that property law can protect consumers by establishing a minimum bundle of rights for consumers: the "consumer's bundle." Working with property theory and an analysis of property values, this Article explains the importance of users' ability to use and alienate digital and technological assets as part of a new property category for consumers. These assets represent a new emerging resource that is currently managed and controlled by manufacturers and platforms. The suggested "consumer bundle" would limit platforms control and protect the rights to use, alienate, and repair.

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INTRODUCTION

Consumers' property rights in digital assets and software-embedded products are significantly weaker than traditional rights in everyday goods.[1] Use, alienability, repair, and the right to bequeath are limited by

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1. AARON PERZANOWSKI & JASON SCHULTZ, THE END OF OWNERSHIP: PERSONAL PROPERTY IN THE DIGITAL ECONOMY 4 (2016) ("[A]ggressive intellectual property laws, restrictive contractual provisions, and technological locks have weakened end user control over the digital goods we acquire"); Chris Jay Hoofnagle, Aniket Kesari & Aaron Perzanowski, *The Tethered Economy*, 87 GEO. WASH. L. REV. 783, 794 (2019) (discussing restrictions and limitations of personal property

manufacturers and platforms.[2] Suggestions for reform focus mostly on contract law and consumer protection regulation,[3] with a few calls for restoring ownership rights.[4]

This Article offers a different perspective to the problem by promoting a new property form: the consumer bundle. This form draws on the bundle of rights approach, which states property does not have a unified core, but is composed of a flexible collection of incidents.[5] When consumers purchase a product, they should have a minimum bundle of rights in said product,[6] which includes minimal use, alienability, and repair rights.[7] This bundle is inherently flexible and avoids problems associated with ownership, such as the inability to address post-sale collaborations.[8] This Article identifies and analyzes the unique characteristics of digital assets and software-embedded goods and articulates the role of property law and theory in addressing the challenges of consumer protection regulation.

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rights imposed by software licenses); Nancy S. Kim, *Revisiting the License v. Sale Conundrum*, 54 LOY. L.A. L. REV. 99, 101 (2020) [hereinafter Kim, *Revisiting*] ("The past twenty years has seen a seismic shift in how businesses distribute consumer goods, which may alter long-held expectations of property ownership. Businesses often 'license' rather than 'sell' their products and view consumers as licensees, rather than owners, of the products they buy.").

2. *See* Aaron Perzanowski & Chris Jay Hoofnagle, *What We Buy When We Buy Now*, 165 U. PA. L. REV. 315, 317–18 (2017) [hereinafter Perzanowski & Hoofnagle] (arguing that shoppers do not understand the limitations on their rights, explaining that "media companies—even large, reputable ones—have sometimes shut down or otherwise deprived consumers access to paid digital media," and noting that "Google, Major League Baseball, MSN Music, Sony, Virgin Digital, Walmart, and Yahoo have all shuttered digital media services, or at least threatened to do so"); Kim, *Revisiting*, *supra* note 1, at 101 (arguing that "[l]icense agreements restrict consumers' rights to use such goods"); Aaron Perzanowski, *Consumer Perceptions of the Right to Repair*, 96 IND. L.J. 361 (2021) [hereinafter Perzanowski, *Consumer*]; Natalie M. Banta, *Property Interests in Digital Assets: The Rise of Digital Feudalism*, 38 CARDOZO L. REV. 1099, 1106 (2017) (explaining that "[b]ecause the sale is only of a license to access digital content, the contracts expressly forbid the user from selling, leasing, distributing, renting, broadcasting, licensing, transferring, or conveying the interest to a third party").

3. *See, e.g.*, Hoofnagle et al., *supra* note 1, at 849–70 (surveying a number of approaches for legal intervention, including contracts, torts, as well as consumer protection regulation); Kim, *Revisiting*, *supra* note 1 (suggesting a contract law approach); Stacy-Ann Elvy, *Contracting in the Age of the Internet of Things: Article 2 of the UCC and Beyond*, 44 HOFSTRA L. REV. 839 (2016) [hereinafter Elvy, *Contracting*] (discussing the classification of transactions between sales and licenses).

4. *See, e.g.*, PERZANOWSKI & SCHULTZ, *supra* note 1, at 183 (discussing intellectual property rules that will help cement ownership rights).

5. *See infra* Part III.

6. *See infra* Part III.

7. *See infra* Part III.

8. *See* Shelly Kreiczer-Levy, *Reclaiming Feudalism for the Technological Era*, 41 CARDOZO ARTS & ENT. L.J. 183, 184 (2023) [hereinafter Kreiczer-Levy, *Reclaiming*] ("A return to full ownership of AI products is impractical and unrealistic. Some kind of continued collaboration between the user and the manufacturer post-sale is inevitable.").

Digital assets and technological products represent an increasingly important resource for consumers.[9] Smart appliances, cars, ebooks, and digital music are new, everyday goods used in millions of households across the United States.[10] These products include both assets that are stored digitally, such as ebooks and music,[11] and software-embedded devices, such as smart appliances, smart toys, autonomous vehicles, and phones.[12] Consumers pay for these products, but they have very limited control over their use and alienability.[13] Furthermore, consumers cannot sell or gift their ebooks and music albums.[14] They cannot bequeath these products to their relatives.[15] In addition, manufacturers limit the use of software-embedded devices such as smart washing machines, smart TVs, drones, and cars in a variety of ways.[16] Software limitations on the durability of a product, the remote disabling of a product post-sale, and the degradation of performance are some of the reported technological

9. *See* DEEPAK KUMAR, KELLY SHEN, BENTON CASE, DEEPALI GARG, GALINA ALPEROVICH, DMITRY KUZNETSOV, RAJARSHI GUPTA & ZAKIR DURUMERIC, ALL THINGS CONSIDERED: AN ANALYSIS OF IOT DEVICES ON HOME NETWORKS 1169 (2019), https://www.usenix.org/system/files/sec19-kumar-deepak_0.pdf [https://perma.cc/V8ZX-AF57].

10. *US Smart Home Statistics (2018–2028)*, OBERLO, https://www.oberlo.com/statistics/smart-home-statistics [https://perma.cc/2E92-74TM] ("The latest smart home statistics from a survey show that as many as 69.91 million households in the US are actively using smart home devices in 2024 [i.e., using them at least once a month]."); *66% of North American Homes Have Multiple IoT Devices*, NEW NET TECHS. LLC, https://www.newnettechnologies.com/66-of-north-american-homes-have-multiple-iot-devices.html [https://perma.cc/6DZH-KTMX]; KUMAR ET AL., *supra* note 9 ("We find that IoT adoption is widespread: on several continents, more than half of households already have at least one IoT device. Device types and manufacturer popularity vary dramatically across regions. For example, while nearly half of North American homes have an Internet-connected television or streaming device, less than three percent do in South Asia where the majority of devices are surveillance cameras.").

11. *See* Perzanowski & Hoofnagle, *supra* note 2, at 323–24 (discussing the market for digital media goods); Banta, *supra* note 2, at 1101 (discussing and defining digital assets).

12. *See, e.g.*, Hoofnagle et al., *supra* note 1, at 785 ("Voice assistants like Google Home and Amazon Alexa, smart kitchen appliances, new cars, and a range of Internet of Things ('IoT') devices share a central trait: they are 'tethered.'"); Elvy, *Contracting*, *supra* note 3, at 840 (discussing a range of IoT devices); Somayya Madakam, R. Ramaswamy & Siddharth Tripathi, *Internet of Things (IoT): A Literature Review*, 3 J. COMPUT. & COMMC'NS 164 (2015) (discussing IoT devices, including servers, computers, and smart phones).

13. *See, e.g.*, Perzanowski & Hoofnagle, *supra* note 2, at 318 (discussing a seller's post-transaction power over the asset and various restrictions to ownership of the consumer); Hoofnagle et al., *supra* note 1, at 810–21 (discussing limitations to functionality and durability); PERZANOWSKI & SCHULTZ, *supra* note 1, at 4 (arguing that "[b]eyond these contractual restrictions, many products today incorporate technology that restricts how you can use them").

14. *See* Perzanowski & Hoofnagle, *supra* note 2, at 318; Hoofnagle et al., *supra* note 1, at 789.

15. *See* Perzanowski & Hoofnagle, *supra* note 2, at 318.

16. *See* Hoofnagle et al., *supra* note 1, at 810–15.

constraints on use.[17] Moreover, consumers' ability to repair technological devices is constrained by a set of technical and legal tools designed to encourage consumers to purchase new products.[18]

Consumers' limited control is supported by a bifurcated legal structure. Consumers own the physical container but only have a license to use the software.[19] Smart watches, new cars, and smart TVs are sold as a package deal neatly compacting two supposedly separate things: a product and a service.[20] Digital assets, such as ebooks, films, and music, only include licenses to use with no physical component.[21] The terms and conditions of these licenses are set in end-user license agreements (EULAs).[22] According to the terms of these licenses, platforms and manufacturers can

17. *See id.* at 811 ("Tethering, however, introduces new dynamics that present consumers with unique risks and harms. It allows manufacturers to decide precisely how long a product will last and what feature set it will offer. And, it often means that when a company fails, the products it sold no longer work."); Natasha Tusikov, *Regulation Through "Bricking": Private Ordering in the "Internet of Things,"* 8 INTERNET POL'Y REV., June 18, 2019, at 1, 2 ("[B]ricking refers . . . to manufacturer-pushed software interruption or impairment that has the intention of negatively affecting product functionality. The Revolv case, an example of bricking, shows that those who control the products' software can determine how their customers use the goods and even the products' lifespan. By discontinuing software updates, which also contain essential security patches, or by pushing software updates that negatively affect product functionality, IoT manufacturers can cause IoT products to cease functioning properly, either immediately or over time. Control over software thus enables control over hardware.").

18. *See, e.g.*, Leah Chan Grinvald & Ofer Tur-Sinai, *Intellectual Property Law and the Right to Repair*, 88 FORDHAM L. REV. 63, 66–67 (2019) [hereinafter Grinvald & Tur-Sinai, *Intellectual Property*] (describing the complexity of the products and the skills needed to make repairs as well as the use of intellectual property rules to stymie repairs); PERZANOWSKI & SCHULTZ, *supra* note 1, at 4, 12 (explaining how software licenses limit repairs).

19. *See* Lothar Determann & Aaron Xavier Fellmeth, *Don't Judge a Sale by Its License: Software Transfers Under the First Sale Doctrine in the United States and the European Community*, 36 U. S.F. L. REV. 1, 16 (2001); Kim, *Revisiting*, *supra* note 1, at 103; Perzanowski & Hoofnagle, *supra* note 2, at 320 ("Licenses are notoriously long and complex. . . . And these licenses are overflowing with defined terms, technical jargon, legalese, and complex sentence structures. Given their complexity and ubiquity, it is only a slight exaggeration to claim that if consumers were to read every license agreement they encountered, the economy would grind to a halt.").

20. *See* Kim, *Revisiting*, *supra* note 1, at 101 ("Customers own their print copies of books, movies, and music but merely license the same content when they purchase it in digital form."); Stacy-Ann Elvy, *Hybrid Transactions and the INTERNET of Things: Goods, Services, or Software?*, 74 WASH. & LEE L. REV. 77, 91 (2017) [hereinafter Elvy, *Hybrid Transactions*] ("However, the IOT transforms the interactions between buyers and sellers. The sale of a good can include not only a standard installation service contract but also additional continuous services and software—all of which are provided via interconnected devices.").

21. Banta, *supra* note 2, at 1101, 1126 (defining digital assets, and the service agreements to the use of the software); *see* Michael L. Rustad & Elif Kavusturan, *A Commercial Law for Software Contracting*, 76 WASH. & LEE L. REV. 775, 780 (2019) (discussing software licensing with no physical component).

22. *See* Perzanowski & Hoofnagle, *supra* note 2, at 318.

limit users' ability to transfer, repair, or modify the object.[23] Manufacturers and platforms can also turn off servers and otherwise compromise the usability of the product.[24]

This legal structure supposedly makes property law irrelevant. Consumers are not the product's owners; they simply have a license to use.[25] Therefore, interfering with possession, use, and alienability is not an infringement of property rights, but rather part of the agreed-upon license's terms.[26] Users agree to the terms of the license, but scholars have consistently argued that consent is not entirely voluntary.[27] Contract law, privacy law, and consumer protection regulation target consumers' flawed consent and are accordingly the relevant legal areas for addressing consumers' limited control.[28] Alternatively, some scholars argue that

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23. *Id.* ("The terms of use and end user license agreements (EULAs) associated with digital media goods typically restrict not only bequeathing those goods by will, but all manner of transfers. According to those provisions, purchasers cannot lend media goods; they cannot give them away as gifts; and they certainly cannot resell them."); Hoofnagle et al., *supra* note 1, at 796 ("By convincing courts to treat their terms as enforceable agreements while dissuading consumers from reading them, firms can contractually restrain otherwise lawful behaviors. Form contracts can prohibit the resale and transfer of products. They can limit repair and modification, ban reverse engineering, forbid the use of competing products or services, and until recently, prohibit negative reviews.").

24. *See, e.g.*, Hoofnagle et al., *supra* note 1, at 786 (discussing the social robot Jibo that malfunctioned as the company's servers shut down).

25. The concept of right-holders' control is foundational for property law, and it has many interpretations. *See, e.g.*, Ernest J. Weinrib, *Poverty and Property in Kant's System of Rights*, 78 NOTRE DAME L. REV. 795 (2003) (offering a theory of property rights and ownership); J.E. PENNER, PROPERTY RIGHTS: A RE-EXAMINATION 13–14 (2020) (arguing that use, alienability, and exclusion are the main implications of property); Larissa Katz, *Exclusion and Exclusivity in Property Law*, 58 U. TORONTO L.J. 275, 276–78 (2008) (arguing that property confers authority over others with regard to a thing); LAURA S. UNDERKUFFLER, THE IDEA OF PROPERTY: ITS MEANING AND POWER 4–5 (2003) (discussing the idea of property and property protection); Thomas W. Merrill & Henry E. Smith, *The Morality of Property*, 48 WM. & MARY L. REV. 1849, 1853–58 (2007) (arguing for a property concept based on information costs).

26. *Cf.* Christina Mulligan, *Licenses and the Property/Contract Interface*, 93 IND. L.J. 1073, 1074–75 (2018) (arguing that EULAs look like contracts, but also transfer property rights, and are thus located on the contract/property interface).

27. *See, e.g.*, Juniper Lovato, Antoine Allard, Randall Harp, Jeremiah Onaolapo & Laurent Hébert-Dufresne, *Limits of Individual Consent and Models of Distributed Consent in Online Social Networks*, FACCT '22: PROCEEDINGS OF THE 2022 ASS'N FOR COMPUTING MACH. CONF. ON FAIRNESS, ACCOUNTABILITY, & TRANSPARENCY, 2022, at 2251, 2252 (discussing the problem of individual consent in a networked society); Neil Richards & Woodrow Hartzog, *The Pathologies of Digital Consent*, 96 WASH. U. L. REV. 1461 (2019) (discussing flawed consent, the complexity of technology, and difficulty understanding the terms of licenses); Daniel J. Solove, Introduction, *Privacy Self-Management and the Consent Dilemma*, 126 HARV. L. REV. 1880 (2013) (arguing that consent is not meaningful in the context of collecting and using personal data); Nizan Geslevich Packin, *Show Me the (Data About the) Money!*, 5 UTAH L. REV. 1277, 1319–23 (2020) (discussing consumer consent to digital data sharing in the context of open banking).

28. *See supra* note 27 and accompanying text.

EULAs effectively create servitudes on consumers' property.[29] In other words, EULAs create non-possessory interests (such as easements, real covenants, and equitable servitudes) that impose restrictions on consecutive property owners.[30] Nevertheless, both characterizations maintain that licenses currently create weak, limited rights.[31]

This Article argues that property law has an important consumer protection purpose in the technological era.[32] Even though full ownership of a product may not be suitable due to the complexity of updating the software post-sale, property law can support and justify requiring a minimum bundle of rights rule for consumers.[33] This argument is supported by two related claims. First, property promotes, among other values, freedom from power and autonomy.[34] It allows owners to exert authority with regard to a resource and be shielded from the power of others.[35] Consumers are subject to continuous corporate power when using digital and technological goods.[36] This power is exerted post-sale,

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29. *See, e.g.*, Christina Mulligan, *Personal Property Servitudes on the Internet of Things*, 50 GA. L. REV. 1121, 1123 (2016) ("Although personal property traditionally cannot be subjected to usage restrictions or servitudes, judges have been comparatively comfortable recognizing restrictions on products that run software (software-embedded goods)."); Molly Shaffer Van Houweling, *The New Servitudes*, 96 GEO. L.J. 885, 889 (2008) ("Licenses that purport (via 'shrink-wrap,' 'click-wrap,' and similar techniques) to limit how recipients down a chain of distribution may use intangible works are, in effect, servitudes. Take, for example, the license that is presented to anyone who downloads a copy of Microsoft's Vista operating system, prompting the recipient to click 'I agree' before the software will install. As with more familiar land servitudes, the restrictions contained in this license aim to run with the intangible work to which the license attaches, and thus to bind every user of that work." (footnotes omitted)).

30. *See* Van Houweling, *supra* note 29, at 889.

31. *See* Mulligan, *supra* note 29, at 1123–24 (detailing the limitations to consumer rights: "this flexibility to create usage and transfer restrictions on software-embedded products has allowed for Canon to claim it can prevent digital camera owners from lending their cameras to others, for Google to forbid resale of its new product, Google Glass, and for Nest to require its thermostat only be used for personal, noncommercial purposes" (footnotes omitted)).

32. *Cf.* Kreiczer-Levy, *Reclaiming*, *supra* note 8 (arguing in favor of creating a property law structure for artificial intelligence (AI) products that will ultimately protect consumers).

33. *See infra* Part III.

34. *See* Charles A. Reich, *The New Property*, 73 YALE L.J. 733, 733 (1964) ("[P]roperty guards the troubled boundary between individual man and the state. It is not the only guardian; many other institutions, laws, and practices serve as well. But in a society that chiefly values material well-being, the power to control a particular portion of that well-being is the very foundation of individuality."); D. Benjamin Barros, *Property and Freedom*, 4 N.Y.U. J.L. & LIBERTY 36 (2009) (suggesting that property and freedom are linked).

35. *Cf.* Katz, *supra* note 25 (arguing that owners are exclusive agenda setters for their owned thing).

36. *See, e.g.*, Hoofnagle et al., *supra* note 1, at 810–21 (discussing the many limitations on use post-sale); Shelly Kreiczer-Levy & Ronit Donyets-Kedar, *Better Left Forgotten: An Argument Against Treating Some Social Media and Digital Assets as Inheritance in an Era of Platform Power*, 84 BROOK. L. REV. 703 (2019) (discussing corporate power in digital assets); Perzanowski &

and even though it involves consent, scholars have repeatedly explained that consent in these cases is tenuous at best.[37] Second, technological products and digital assets represent an emergent new resource. Much like natural resources, including wind, groundwater, and oil, these goods involve issues of allocation, governance, and management.[38] Property law regulates claims to resources based on a variety of considerations, including values such as freedom from power, efficiency, and community,[39] and it should also regulate digital and technological products.

This Article suggests that property law should limit manufacturers' and platforms' power to interfere with consumers' property rights.[40] The law should create a consumer-oriented property form and set a minimum bundle of rights for consumer goods. The exact bundle will depend on the type of resource, but it must ensure a minimal level of use, alienability, and repair. As a result, the consumers' bundle rule will have a consumer protection function.[41]

This Article proceeds as follows. Part I explains the problem of technological property, including both digital assets and software-embedded products. It then analyzes current proposals for law reform from contract law, privacy law, and consumer regulation and argues that they offer only partial solutions. Part II evaluates the role of property law in regulating these assets theoretically and considers the strengths and weaknesses of a property approach. Part III presents the consumer bundle and its implications.

Hoofnagle, *supra* note 2, at 318 (surveying a variety of corporate imposed limitations on media goods); JOSHUA A. T. FAIRFIELD, OWNED: PROPERTY, PRIVACY, AND THE NEW DIGITAL SERFDOM 13–49 (2017) (discussing corporate power in various digital goods).

37. *See, e.g.*, Kim, *Revisiting*, *supra* note 1, at 106 (discussing the urgency of consent, and the need to agree to updated terms of services immediately); Lori Andrews, *The Fragility of Consent*, 66 LOY. L. REV. 11, 11–12 (2020) ("The process of consent in the app era has eroded considerably from its legal roots. It has come untethered from the idea of an informed and voluntary choice. Battered and debilitated, it no longer resembles the concept that I learned in a law school course titled 'Informed Consent,' that I wrote about in academic articles and chapters, or that I discussed in consultations with federal agencies and professional organizations.").

38. *See* Vanessa Casado Pérez & Yael R. Lifshitz, *Natural Transplants*, 97 N.Y.U. L. REV. 933 (2022) (discussing allocation and regulation of natural resources).

39. *See, e.g.*, HANOCH DAGAN, PROPERTY: VALUES AND INSTITUTIONS (2011) [hereinafter DAGAN, PROPERTY] (discussing different values in property institutions); HANOCH DAGAN, A LIBERAL THEORY OF PROPERTY 2 (2021) [hereinafter DAGAN, LIBERAL THEORY] (presenting a justification for property that includes, among other things, autonomy and relational justice).

40. *See infra* Part III.

41. *Cf.* Danielle D'Onfro, *The New Bailments*, 97 WASH. L. REV. 97, 101 (2022) (discussing bailments, a property law doctrine, as a way to protect consumers that store photos and documents in servers); Michael J. O'Connor, *Digital Bailments*, 22 U. PA. J. CONST. L. 1271 (2020) (discussing bailments as a property law mechanism for protecting privacy).

I. TECHNOLOGICAL PROPERTY: FROM PROPERTY TO LICENSES

A. Limited Consumer Control over Digital and Technological Products

We typically think of property as a category that includes physical objects.[42] Property law's rules and doctrines protect property from interference.[43] Rules of possession, trespass, and takings law are notable examples.[44] Because of this analytical focus, property has long been considered independent from consumption practices.[45] Consumption is traditionally understood as one of the ways by which a person becomes an owner of a thing.[46] Once the person is an owner, property law regulates control, use, and alienability.[47] Consumption patterns remain the mere portal to ownership.

The technological era is changing the way people consume goods. Paying for a product no longer means that the transaction has ended,

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42. *See* SHELLY KREICZER-LEVY, DESTABILIZED PROPERTY: PROPERTY LAW IN THE SHARING ECONOMY 16 (2019) ("Physical property . . . is embodied in a given space. This embodiment connects an individual or a group to that given space, and to the relationships that exist and flourish in this space. The law cultivates this embodiment. Users form attachments to property not only because the property has a continuous physical presence in the world, but also because the law secures their interests and encourages long-term engagement with property."); Audrey G. McFarlane, *The Properties of Instability: Markets, Predation, Racialized Geography, and Property Law*, 2011 WIS. L. REV. 855, 874 ("As a practical matter, a stable system of property ownership is a system that everyone believes in, honors, and enforces. Because a fundamental predicate for a system of property is the widespread distribution of ownership, there are underlying practices that are also part of implementing stability. In order to facilitate distribution, these practices relate to physical and conceptual division and allocation of those things intended to be property." (footnote omitted)).

43. *See, e.g.*, Thomas W. Merrill, *Trespass, Nuisance, and the Costs of Determining Property Rights*, 14 J. LEGAL STUD. 13 (1985) (discussing the right to exclude intrusions by others); Maureen E. Brady, *Property and Projection*, 133 HARV. L. REV. 1143 (2020) (discussing projections and trespass as a means to prevent projections on private buildings).

44. *See, e.g.*, Merrill, *supra* note 43 (discussing the doctrines of trespass and nuisance in protecting from the intrusion of others); Brady, *supra* note 43 (discussing trespass as a doctrine that serves to prevent the interference of projection on private buildings); Joseph L. Sax, *Takings, Private Property and Public Rights*, 81 YALE L.J. 149 (1971) (analyzing takings law and its constitutional requirements).

45. *See* KREICZER-LEVY, *supra* note 42, at 6–7 ("According to conventional wisdom, property is unaffected by consumption trends. Property concerns the legal relations with respect to a thing, and it entails powers to control that thing. Because it deals with a formal relation, property law as a field of study is less interested in consumer choices. The choice whether or not to own or whether or not to lease property is extrinsic to property law, a preliminary, somewhat irrelevant process.").

46. *See id.*

47. *See* PENNER, *supra* note 25, at 13 (arguing that use, alienability, and exclusion are the fundamental qualities of property); Lee Anne Fennell, *Adjusting Alienability*, 122 HARV. L. REV. 1403 (2009) (analyzing alienability and exclusion and their relations to use).

resulting in the consumers' ownership.[48] Quite the contrary. Consumption now entails a long-term relationship between consumers and producers in a variety of digital and technological products.[49] Consumers can only use the property they purchase provided the manufacturer or platform continues to update its software and maintain its servers.[50]

Furthermore, consumers' preferences are focused on experiences.[51] In the past, consumer culture researchers considered ownership to be the ultimate goal of consumer desire.[52] However, researchers now agree that consumers, especially young consumers, prefer experiences over things.[53] Consumers want to use products easily and quickly, and are less concerned with the legal relations to a thing.[54]

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48. *See* Perzanowski & Hoofnagle, *supra* note 2, at 317–18; Kim, *Revisiting*, *supra* note 1, at 101; JEREMY RIFKIN, THE AGE OF ACCESS 4 (2001) ("In the new era, markets are making way for networks, and ownership is steadily being replaced by access. Companies and consumers are beginning to abandon the central reality of modern economic life—the market exchange of property between sellers and buyers.").

49. *See* Perzanowski & Hoofnagle, *supra* note 2, at 318–19; Hoofnagle et al., *supra* note 1, at 785 ("We define 'tethering' as the strategy of maintaining an ongoing connection between a consumer good and its seller that often renders that good in some way dependent on the seller for its ordinary operation."); RIFKIN, *supra* note 48, at 4.

50. *See supra* note 23 and accompanying text.

51. KREICZER-LEVY, *supra* note 42, at 2.

52. *See* Russell W. Belk, *Possessions and the Extended Self*, 15 J. CONSUMER RSCH. 139, 139 (1988) ("A key to understanding what possessions mean is recognizing that, knowingly or unknowingly, intentionally or unintentionally, we regard our possessions as parts of ourselves."); HELGA DITTMAR, THE SOCIAL PSYCHOLOGY OF MATERIAL POSSESSIONS 1 (1992).

53. *See* Cait Lamberton & Kelly Goldsmith, *Ownership: A Perennial Prize or a Fading Goal? A Curation, Framework, and Agenda for Future Research*, 47 J. CONSUMER RSCH. 301, 301 (2020) ("Today's marketplace, however, provides an abundance of examples suggesting that the desire to consume and the desire to own may be orthogonal."); Loïs Crespo Moreno, How Do Millennials Fit in the Luxury Industry? Insight on Their Characteristics, Motivations and Consumption Behavior. (2016) (M.S. thesis, Louvain School of Management) (on file with the Louvain School of Management). Historically, consumers were seeking a broad variety of experiences through consumption. *See* ANAT ROSENBERG, THE RISE OF MASS ADVERTISING 35–93 (2022) (providing an expansive reception study of historical advertising, relying on legal testimonies among other sources, and showing a search for transformative experiences through consumption); *see also* Nizan Geslevich Packin, *Financial Inclusion Gone Wrong: Securities and Cryptoassets Trading for Children*, 74 HASTINGS L.J. 349, 367 (2023) (describing how, for instance, a modern era digital game, "GameFi[,] allows players to own different virtual elements of games, such as skins, characters, objects, and even areas of the actual game").

54. *See* Fleura Bardhi & Giana M. Eckhardt, *Access-Based Consumption: The Case of Car Sharing*, 39 J. CONSUMER RSCH. 881, 883 (2012) ("While historically access was perceived as an inferior mode of consumption, the market has indicated a shift in the sociocultural politics of consumption. During the last decade, market-mediated access has become a pervasive and increasingly important phenomenon, as companies are finding ways to monetize it."); Russell Belk, *You Are What You Can Access: Sharing and Collaborative Consumption Online*, 67 J. BUS. RSCH. 1595, 1597–98 (2014) ("One reason is that young people are apparently losing their interest in car ownership as being important to their self-definition. They find car purchase, maintenance, and parking to be prohibitively

Manufacturers and platforms capitalize on consumers' new preferences. In exchange for flexibility, ease, and comfort of use, consumers receive an inferior right: a license to use.[55] Even when the physical container is owned by the consumer, the software or media good itself is not.[56] Consumers do not own a copy of the software but have a license to use it. The software is separate from the physical product,[57] and yet, without the software, the product is not functional and cannot operate as advertised and marketed.[58]

This structure creates a continuous dependency on manufacturers' and platforms' services.[59] Users of software-embedded goods—from digital assets to internet-connected products, typically dubbed the Internet of Things (IoT) or products that have artificial intelligence (AI) capabilities—have limited control over these goods.[60] Their use is contingent on the ongoing activity of the manufacturer, which may or may not continue to update the software.[61] Manufacturers can decide "precisely how long a product will last and what feature set it will offer."[62] Manufacturers can also remove features or otherwise downgrade the performance of technological products.[63] Another form of interfering with use is "bricking," which is the remote disabling of a product post-sale.[64]

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expensive and increasingly would rather not have the hassle."); Jörg Firnkorn & Martin Müller, *Selling Mobility Instead of Cars: New Business Strategies of Automakers and the Impact on Private Vehicle Holding*, 21 BUS. STRATEGY & ENV'T 264, 266 (2012).

55. Perzanowski & Hoofnagle, *supra* note 2, at 319; *see* PERZANOWSKI & SCHULTZ, *supra* note 1, at 22; Mulligan, *supra* note 29, at 1073–74.

56. *See* Perzanowski & Hoofnagle, *supra* note 2, at 324.

57. *See* Van Houweling, *supra* note 29, at 927–31 (discussing the unique development of servitudes in the case of software licenses).

58. *Cf.* Elvy, *Hybrid Transactions*, *supra* note 20, at 89 (promoting a functionality approach to hybrid transactions that asks whether the software-embedded good can function without the software).

59. Hoofnagle et al., *supra* note 1, at 846.

60. *See id.* at 810–14; Elvy, *Contracting*, *supra* note 3, at 858; Mulligan, *supra* note 29, at 1073–74.

61. *See* Hoofnagle et al., *supra* note 1, at 793–94.

62. *Id.* at 811; *see also id.* ("After the company shut down, the devices were useless since every request to turn a light off or on had to be processed through the firm's now shuttered cloud service. For tethered products, it is not the wear and tear of physical components, but the business decisions of the seller that often dictate whether a product continues to operate.").

63. *Id.* at 814 ("Rather than killing a device in one fell swoop, complete with a press release announcing the execution date, tethering offers the option of incrementally removing features or degrading performance over time.").

64. *Id.* at 811–14 (discussing bricking and technological products' lifetimes); Tusikov, *supra* note 17, at 2.

In addition, the consumers' right to transfer the product by sale, gift, or bequest is entirely curtailed in digital media goods.[65] The ability to repair the product is significantly limited as well.[66] Importantly, this legal structure is markedly different from the sharing economy trend of accessing a car, bike, or scooter instead of owning one. People who choose access know they have a short-term license to use and, for various reasons, are not interested in long-term use of the object.[67] When people buy an AI product, an IoT product, or a digital asset, they plan on long-term use and control and are typically not aware of their inferior rights.[68] In this sense, technological products differ from typical everyday goods. Indeed, everyday goods tend to be less durable than they used to be; they may malfunction and require repair.[69] However, the manufacturer's control over such a product ends with the sale.[70] Technological products are continuously controlled by manufacturers and platforms long after the sale.[71]

The split structure of ownership and a license to use creates an inferior property right. Ownership includes, among other sticks in the bundle, the right to possess, use, manage, and transfer the property.[72] Leases similarly secure long-term use and possession for a guaranteed period.[73] The rights of consumers do not guarantee a period of quality use or the ability to

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65. *See* Perzanowski & Hoofnagle, *supra* note 2, at 322 (explaining that consumers "mistakenly believe they can keep [digital] goods permanently, lend them to friends and family, give them as gifts, leave them in their wills, resell them, and use them on their devices of choice").

66. *See* PERZANOWSKI & SCHULTZ, *supra* note 1, at 144; Grinvald & Tur-Sinai, *Intellectual Property*, *supra* note 18, at 66 ("Unfortunately for consumers, manufacturers have been taking advantage of this product complexity to stymie the do-it-yourselfer and independent repair shop from making repairs in a variety of different ways."); Leah Chan Grinvald & Ofer Tur-Sinai, *Smart Cars, Telematics and Repair*, 54 U. MICH. J.L. REFORM 283, 287 (2021).

67. *See* Shelly Kreiczer-Levy, *Share, Own, Access*, 36 YALE L. & POL'Y REV. 155, 192 (2017) [hereinafter Kreiczer-Levy, *Share*] (arguing that access prioritizes use over title and "devalue[s] attachment to possession" and that "[t]he functionality of the thing serves as the platform for interaction and not the essential qualities of the object").

68. Perzanowski & Hoofnagle, *supra* note 2 (providing empirical support for the thesis that users believe they buy digital assets based on their experiences with physical assets).

69. *Cf.* Eléonore Maitre-Ekern & Carl Dalhammar, *Regulating Planned Obsolescence: A Review of Legal Approaches to Increase Product Durability and Reparability in Europe*, 25 REV. EUR. CMTY. & INT'L ENV'T L. 378, 393 (2016).

70. *See* PERZANOWSKI & SCHULTZ, *supra* note 1, at 2.

71. *See* Perzanowski & Hoofnagle, *supra* note 2, at 324.

72. *See* A.M. Honoré, *Ownership*, *in* OXFORD ESSAYS IN JURISPRUDENCE 107, 107–28 (A.G. Guest ed., 1961); Denise R. Johnson, *Reflections on the Bundle of Rights*, 32 VT. L. REV. 247, 253 (2007).

73. Thomas W. Merrill, *The Economics of Leasing*, 2020 J. LEGAL ANALYSIS 1, 1–2 ("A lease is a transfer of an asset for a limited time in return for periodic payments called rent. The lessor is typically the owner of the asset and gets it back after the lease expires; the lessee is entitled to use the asset free of interference from the lessor during the lease provided the lessee pays the rent and performs the other obligations of the lease." (emphasis omitted)).

transfer the product.[74] Some argue that the manufacturer's limitations on use and alienability resemble servitudes placed on real property.[75] The consumer is the owner of the product, but the product is subject to the specific restrictions set by the manufacturer.[76] This characterization is illuminating because it provides a property law description of the limitations. Nonetheless, it is unclear whether the rights of consumers can be rightly characterized as ownership rights. Regardless of the characterization of manufacturer's rights, the current legal structure results in limited consumer control of technological and digital goods that translates into weak property rights.

B. Proposed Reforms: Contracts, Torts, and Consumer Protection

The problem of consumers' limited control over technological and digital goods has prompted numerous suggested reforms.[77] These reforms encompass a variety of legal areas, such as contract law, product liability, and consumer protection regulation.[78] The first category of reforms targets the distinction in EULAs between a sale and a license.[79] When a product is sold, the consumer becomes its owner. If it is only licensed, the consumer's control is limited. Professor Nancy Kim suggests that instead of allowing the parties to the contract to characterize the transaction, there

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74. *E.g.*, Hoofnagle et al., *supra* note 1, at 809–15.

75. *See* Van Houweling, *supra* note 29, at 889 ("As with more familiar land servitudes, the restrictions contained in this license aim to run with the intangible work to which the license attaches, and thus to bind every user of that work. Some observers use the servitude characterization to call this and similar licensing practices into question."); Mulligan, *supra* note 29, at 1123; Glen O. Robinson, *Personal Property Servitudes*, 71 U. CHI. L. REV. 1449, 1452 (2004).

76. *See* Van Houweling, *supra* note 29; Robinson, *supra* note 75.

77. *See, e.g.*, Kim, *Revisiting*, *supra* note 1, at 140–42 (offering a method for classifying license and sale contracts); Elvy, *Hybrid Transactions*, *supra* note 20, at 148–64 (promoting a functionality approach to assess whether the transactions falls under Article 2 of the Uniform Commercial Code (UCC)); Rebecca Crootof, *The Internet of Torts: Expanding Civil Liability Standards to Address Corporate Remote Interference*, 69 DUKE L.J. 583, 646–60 (2019) (arguing for expanding corporate liability for remote interference in physical devices); Hoofnagle et al., *supra* note 1, at 870–73 (offering a mixed approach that combines private and consumer law rules); Mulligan, *supra* note 29, at 1126 (arguing that "permitting servitudes or usage restrictions on software-embedded goods and other goods protected by intellectual property law has the potential to cause substantial economic and social harm").

78. *See* Kim, *Revisiting*, *supra* note 1, at 140–42 (suggesting a mechanism for contract law interpretation); Elvy, *Hybrid Transactions*, *supra* note 20, at 148–64 (interpreting Article 2 of the Uniform Commercial Code as applied to software licenses in certain cases); Crootof, *supra* note 77, at 646–60 (arguing for expanding corporate liability rules to cover interference with IoT devices); Hoofnagle et al., *supra* note 1, at 870 (suggesting a number of consumer protection remedies).

79. *See, e.g.*, Kim, *Revisiting*, *supra* note 1, at 140–42 (suggesting a contract interpretation solution); Elvy, *Hybrid Transactions*, *supra* note 20, at 148–64 (discussing a contract classification solution based on the interpretation of the Uniform Commercial Code).

should be clear criteria that qualitatively evaluate the legal function of the contract's terms.[80] She offers two guidelines: whether the terms affect the sold or licensed part of the transaction, and whether the contract is formed before or after the sale.[81] She insists that a contract cannot redefine a sale, but it *can* initially characterize a transaction as a license.[82]

Professor Stacy-Ann Elvy also identifies the problem as resulting from the hybrid nature of sale-license transactions.[83] Elvy analyzes Article 2 of the Uniform Commercial Code (UCC), which applies to sales of goods, and discusses its applicability to hybrid transactions in technological products.[84] Elvy suggests a functionality approach that discerns whether the split between the physical object and software is reasonable.[85] According to this proposed rule, we should ask whether the good could function without its software.[86] When it cannot, then the software is an inseparable part of the device and should not be understood as a separate product.[87]

The second category of suggested reforms does not challenge the characterization of hybrid transactions, but instead seeks to increase corporate accountability toward consumers of digital and technological

80. *See* Kim, *Revisiting*, *supra* note 1, at 108 ("At the heart of the license v. sale conundrum is contract law. The characterization of a transaction determines what may be done with the product, who controls how the product may be used, and what happens in the event of a dispute.").

81. *See id.* ("A contract may contain terms that determine how the transaction is characterized. Accordingly, contracts have the potential to alter consumer expectations in a profound way. For example, if a consumer pays for a television, he or she may expect to be able to later resell it or give it away when he or she no longer has a use for it. But could a consumer do so if, prior to purchase, he or she had agreed to contractual terms that stated that he or she was not the owner of the television, but a mere licensee?").

82. *See id.* at 109 ("[T]he enforceability of contract terms in a license-sale transaction depends upon two factors: first, whether the terms affect the 'sold' portion or the 'licensed' portion; and second, whether the contract is formed pre- or post-sale. A contract cannot recharacterize a sale as a license after the transaction has occurred, but it can impose restrictions that may define or characterize that transaction if those restrictions are agreed to before the transaction has occurred.").

83. *See* Elvy, *Hybrid Transactions*, *supra* note 20, at 81.

84. *Id.* at 79 ("[O]ne of the thorniest issues in sale of goods transactions is how best to determine whether Article 2 applies to transactions involving the provision of goods and non-goods, such as services or software.").

85. *See id.* at 89–90.

86. *See id.* at 89 ("[U]nder a functionality test, Article 2 would apply to a hybrid IOT transaction where IOT devices are sold with ongoing services and software that are necessary to enable the device to function as advertised. Thus, if the IOT device cannot fully operate without the accompanying service and software provided by the manufacturer or retailer, the transaction should be subject to Article 2.").

87. *See id.* at 148–49 ("If a manufacturer or retailer has advertised the device as being able to perform certain functions and ongoing services, and software updates are needed in order for a purchaser to use all aspects of the device, the transaction should be subject to Article 2. Even where an agreement is labeled as a license of software or services, if the software and services are tied to the operations of the device, Article 2 should govern the related dispute.").

goods.[88] Professor Rebecca Crootof discusses the power imbalance between corporations and consumers in IoT products and the increased risk of injury that these objects create.[89] Crootof explains that hybrid transactions serve to shield companies from liability and proposes rules that expand corporate liability for faulty products.[90]

Professors Chris Jay Hoofnagle, Aniket Kesari, and Aaron Perzanowski take a complementary approach.[91] They do not challenge the legal structure of hybrid transactions, but focus on the unique vulnerability of consumers in tethered devices, such as IoT and AI products.[92] Consequently, they propose a set of consumer protection remedies to address this vulnerability, including a right to repair,[93] privacy arrangements,[94] and disclosing potential risks in malfunction and obsolescence.[95] Others add reforms in intellectual property law that secure consumers' control.[96]

A consumer protection approach has many benefits, as it offers tailored solutions to concrete consumer vulnerabilities. European directives provide protections that target consumers' vulnerability in the long-term use of technological and digital devices.[97] These directives set goals for

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88. *See* Crootof, *supra* note 77, at 592 ("[This article] concludes by outlining various routes toward expanding corporate liability for harms resulting from remote interference. In some situations, it may be sufficient to adopt more expansive understandings of existing tech-neutral doctrine; in others, it may be clarifying to articulate tech-specific rules.").

89. *Id.* at 589 ("[T]his technology increases consumer risk without a corresponding increase in corporate liability. Given how IoT devices increasingly affect our environment and bodies, the potential magnitude and kinds of harm from corporate remote interference are significant; given that the digital nature of the IoT enables relatively costless and automated action, the potential scale of these harms is staggering.").

90. *See id.* at 590–91.

91. *See* Hoofnagle et al., *supra* note 1.

92. *See id.* at 785 (defining "tethering" as "the strategy of maintaining an ongoing connection between a consumer good and its seller that often renders that good in some way dependent on the seller for its ordinary operation").

93. *See id.* at 864 ("[A] statutory right to repair would facilitate markets for third-party repair services. Such markets, in turn, would drive down prices for new and refurbished goods, improve device longevity, and mitigate the environmental impact of the digital economy.").

94. *See id.* at 868–69.

95. *See id.* at 866 ("Because it is difficult for consumers to evaluate the lifespan of a tethered device, one solution might be to require sellers to disclose the anticipated lifetime and obsolescence risks. Some software sellers, such as Microsoft, already specify a certain date when support ends. Presumably, sellers would have insight into consumer expectations and set a date consistent with preferences and the competitive landscape.").

96. *See, e.g.*, PERZANOWSKI & SCHULTZ, *supra* note 1, at 177–85 (suggesting both reforms in the patent exhaustion rules and reforming copyright law).

97. Liliia Oprysk & Karin Sein, *Limitations in End-User Licensing Agreements: Is There a Lack of Conformity Under the New Digital Content Directive?*, 51 INT'L REV. INTELL. PROP. &

European Union (EU) member states, but those states can decide how to achieve those goals.[98] The Digital Content Directive (DCD) states that limitations on use that violate consumers' reasonable expectations can be considered non-conforming goods.[99] Consumers will be entitled to contractual remedies in these cases.[100] In addition, according to European directives, platforms and manufacturers have to continue to update the software and keep it operable for at least two years.[101]

The suggested reforms are incredibly valuable, and they point to the complexity of the problem and the richness of the legal mechanisms available for reform. However, there is an additional justification that points to the type of reform the law should promote. The problem with consumers' limited control is not only that consumers do not know what they buy,[102] or that consumers' reasonable expectations are not respected.[103] This is indeed part of the problem, but not its full expression. Consumers' limited control is a cause for legal concern because manufacturers are effectively regulating an emergent resource and shaping its social and legal use.[104] Use of digital and technological assets is prevalent, and it continues to grow.[105] A major resource in people's daily home lives is governed by the constrained power of users.[106] This

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COMPETITION L. 594, 595 (2020) ("[The] Digital Content Directive (DCD) laid down some core rules concerning contracts for the supply of digital content and digital services to consumers. Pursuant to Art. 1 DCD, its primary purpose is to contribute to the proper functioning of the internal market while providing for a high level of consumer protection.").

98. *Types of Legislation*, EUR. UNION, https://european-union.europa.eu/institutions-law-budget/law/types-legislation_en [https://perma.cc/52MD-U7XS].

99. Oprysk & Sein, *supra* note 97, at 594.

100. *Id.* ("[T]he Directive provides consumers with contractual remedies if the use of digital content is prevented or limited due to the violation of third-party IP rights in breach of the subjective and objective conformity requirements. Whereas the subjective criteria stem from the contractually agreed obligations, objective criteria rely on the reasonable consumer expectations towards the particular type of digital content.").

101. *See* Jorge Morais Carvalho, *Sale of Goods and Supply of Digital Content and Digital Services – Overview of Directives 2019/770 and 2019/771*, 8 J. EUR. CONSUMER & MKT. L. 194 (2019).

102. *See* Perzanowski & Hoofnagle, *supra* note 2, at 322.

103. *Cf.* Oprysk & Sein, *supra* note 97, at 597.

104. *Cf.* FAIRFIELD, *supra* note 36, at 3 (discussing the widespread ramifications of digital ownership and comparing users to digital peasants); Kreiczer-Levy, *Reclaiming*, *supra* note 8, at 184 (discussing the property conceptualization of the continuous collaboration between manufacturers and users post-sale).

105. *See, e.g.*, KUMAR ET AL., *supra* note 9, at 1169 ("IoT devices are widespread. More than half of households have at least one IoT device in three global regions and in North America more than 70% of homes have a network-connected device.").

106. *Cf.* FAIRFIELD, *supra* note 36, at 3 ("If we do not take back our ownership rights from software companies and overreaching governments, we will become digital peasants, only able to use our smart

legal phenomenon has normative implications on the institution of property and its role in promoting freedom from power.[107]

II. THE PROPERTY APPROACH

This Article argues that property law has an indispensable role in regulating technological resources. Before discussing the arguments that support this approach, it is important to address the potential problems with a property claim. Property law creates a framework within which parties can reach mutual decisions.[108] Contract law allows parties to shape the terms of transactions and facilitate the customization of interests.[109] Therefore, manufacturers and consumers have the freedom to customize their agreements.[110] If the contract stipulates that consumers have a license to use the software, then it presumably reflects their mutual will. Furthermore, licenses are a common form of property use and thus present no apparent challenge to property law.[111]

However, this argument requires a deeper investigation into contract law and property law's complementary roles.[112] Contrary to the flexibility of contracts, property law creates a limited set of standardized forms.[113]

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devices, our homes, our cars, and even our own software-enabled medical implants purely at the whim of others."); PERZANOWSKI & SCHULTZ, *supra* note 1, at 1 (discussing the power to control and repair of digital versus analog products); Kreiczer-Levy, *Reclaiming*, *supra* note 8, at 188 (describing users' dependency on commercial companies who control the property).

107. *See infra* Part II.

108. *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) (explaining that "the law will enforce as property only those interests that conform to a limited number of standard forms").

109. *See id.* ("A central difference between contract and property concerns the freedom to 'customize' legally enforceable interests. The law of contract recognizes no inherent limitations on the nature or the duration of the interests that can be the subject of a legally binding contract.").

110. *Cf.* Kim, *Revisiting*, *supra* note 1, at 125.

111. *See* Daniel B. Kelly, *The Right to Include*, 63 EMORY L.J. 857, 860 (2014) ("If an owner withdraws a contractual waiver or terminates a license, the licensee may sue for breach. Conversely, if a licensee exceeds the scope of an inclusion, the owner may sue the licensee to vindicate the owner's rights. Knowing that legal remedies are available, both parties may be less inclined to act strategically, both at the outset and during performance of the contract.").

112. *See*, *e.g.*, Merrill & Smith, *supra* note 108, at 3 (discussing the differences between contract and property); Yun-chien Chang & Henry E. Smith, *The* Numerus Clausus *Principle, Property Customs, and the Emergence of New Property Forms*, 100 IOWA L. REV. 2275, 2276 (2015) (discussing the standardization of property forms); Nestor M. Davidson, *Standardization and Pluralism in Property Law*, 61 VAND. L. REV. 1597, 1598 (2008) (discussing the differences between contract and property in terms of the standardization of property); Hanoch Dagan, *The Craft of Property*, 91 CALIF. L. REV. 1517, 1519 (2003) (discussing the tension between form and substance in property law).

113. *See* Davidson, *supra* note 112, at 1601 (discussing property's public role and arguing that "standardization is a near-universal feature of property systems because the phenomenon facilitates

Because property has an *in rem* function, and it affects the interests of third parties, property structures are limited.[114] These fixed forms prevent "idiosyncratic interests" that overburden the market.[115] As such, property has a quasi-public role that regulates the interests of private parties.[116] This regulatory function invites a normative evaluation of the implications of consumers' rights on the market, on property values, and on third parties.[117] Property law has always responded to economic, social, and technological changes and adapted its standard forms to new challenges.[118] Because consumer vulnerability is not limited to a particular transaction, but has become the dominant form of regulating digital and technological products,[119] it is time to consider creating a property form for consumers' rights, and determine the bundle of rights it should entail.

Another potential difficulty with the property approach results from the current legal structure. According to the mainstream view, consumers buy two things—a physical product and its software. They own one of those things and have a license to use the other.[120] Furthermore, if the license represents a service and the physical container is owned, there is no property concern.[121] This split between the physical good and software allows manufacturers to suppress the property approach. Nonetheless, this split is problematic normatively and analytically. The product requires

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the use of property law to define, control, and regulate the public aspects of private legal relations with respect to things—the foundational top-down element of property law" (emphasis omitted)).

114. *See id.*; Meredith M. Render, *Complexity in Property*, 81 TENN. L. REV. 79, 85 (2013) ("The benefit of eliminating idiosyncratic interests is, at base, epistemic. Standardization serves to constrain the overall volume of information that we must process to understand and enforce property interests. In this way, numerus clausus makes it possible for us to understand our property interests." (emphasis omitted) (footnotes omitted)).

115. Render, *supra* note 114, at 85.

116. *See* Davidson, *supra* note 112, at 1601.

117. *See, e.g.*, Merrill & Smith, *supra* note 108, at 8 ("When property rights are created, third parties must expend time and resources to determine the attributes of these rights, both to avoid violating them and to acquire them from present holders. The existence of unusual property rights increases the cost of processing information about all property rights.").

118. *See* Davidson, *supra* note 112, at 1600 ("[A]lthough standardization is a stable feature of property law, the particular list of forms and their internal substance have always been dynamic."); Gregory S. Alexander, *Intergenerational Communities*, 8 LAW & ETHICS HUM. RTS. 21, 32 (2014); Gregory S. Alexander, *The Dead Hand and the Law of Trusts in the Nineteenth Century*, 37 STAN. L. REV. 1189, 1257–61 (1985); Shelly Kreiczer-Levy, Essay, *Past and Present: The Dialectics of Property*, 29 CORNELL J.L. & PUB. POL'Y 607 (2020).

119. *See* Hoofnagle et al., *supra* note 1, at 785 (discussing a range of products that are "tethered"); Perzanowski & Hoofnagle, *supra* note 2, at 317–18 (discussing digital media); PERZANOWSKI & SCHULTZ, *supra* note 1, at 3 (discussing media goods).

120. *See* Perzanowski & Hoofnagle, *supra* note 2, at 319–20.

121. *See* Hoofnagle et al., *supra* note 1, at 794–95.

both the physical container and the software in order to operate.[122] Following Elvy's functionality test, when the good cannot function as advertised without the software, the product and the software should be understood as one thing.[123] Moreover, one cannot successfully transfer only one of the components, as the physical good cannot operate as advertised without the software.[124] Analytically then, the physical good and the software should be understood as one thing. Normatively, the manufacturer-structured bifurcation of the product makes it difficult for consumers to correctly identify and understand their rights in the product.[125] This complication burdens the market and further inhibits alienability.[126]

These objections to the property approach are grounded in a misguided premise. They fail to appreciate the function and use of digital and technological devices for individual consumers, as well as their impact on the market and on social life. Technological property, including digital assets, IoT products, and AI products, represents an emergent resource that creates new regulatory challenges.[127] These challenges are not unlike the challenges facing decision-makers in other resource governance areas.[128] Natural resources, such as wind, oil, and groundwater, require regulation that considers their specific traits.[129] These resources are

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122. *See* Elvy, *Hybrid Transactions*, *supra* note 20, at 89 ("[U]nder a functionality test, Article 2 would apply to a hybrid IOT transaction where IOT devices are sold with ongoing services and software that are necessary to enable the device to function as advertised."); Kim, *Revisiting*, *supra* note 1, at 103; Hoofnagle et al., *supra* note 1, at 794.

123. *See* Elvy, *Hybrid Transactions*, *supra* note 20, at 148–49 ("[W]here the functionality of the IOT device depends on the provision of services and software to be supplied by the manufacturer or retailer, Article 2 would apply to the entire transaction. If a manufacturer or retailer has advertised the device as being able to perform certain functions and ongoing services, and software updates are needed in order for a purchaser to use all aspects of the device, the transaction should be subject to Article 2.").

124. *Id.* at 95–96.

125. *Cf.* Perzanowski & Hoofnagle, *supra* note 2, at 335 ("A surprisingly high percentage of consumers believe that when they Buy Now, they acquire the same sort of rights to use and transfer digital media goods that they acquire when they purchase physical goods. The data also strongly suggest that these rights matter to consumers. They are willing to pay more for those rights, and they are more likely to acquire media through other means, both lawful and unlawful, in the absence of those rights." (emphasis omitted)).

126. *Cf.* Merrill & Smith, *supra* note 108, at 40–42 (discussing the role of property rights in minimizing information costs).

127. *See, e.g.*, Moran Ofir & Ido Sadeh, *More of the Same or Real Transformation: Does FinTech Warrant New Regulations?*, 21 HOUS. BUS. & TAX L.J. 280 (2021) (discussing the regulatory challenge raised by the FinTech industry).

128. Pérez & Lifshitz, *supra* note 38, at 935 (explaining that "[a]ll these grand new infrastructure and energy projects will require policymakers to reassess the use of our resources in light of modern challenges").

129. *See id.* at 935, 937–38.

different from land and chattel because they can be fugacious and, only in certain cases, renewable.[130] Professors Vanessa Casado Pérez and Yael Lifshitz argue that the law develops governance and allocation rules for new resources by borrowing from existing regulation of other resources.[131] They refer to this evolution of rules as a process of "natural transplants."[132]

Although technological property is not a natural resource, the challenge to regulation is similar. Digital assets and software-embedded products are designed and manufactured, rather than captured.[133] However, these assets and products represent a resource with its own unique traits that, even if they may not raise questions of allocation, may raise questions of use and governance.[134] This resource has three main characteristics. First, consumer technological property refers to assets used for the purpose of personal consumption and enjoyment.[135] They are part of consumers' everyday lives in their homes and in other personal activities.[136] Second, these products are designed to require post-sale collaborations between consumers and manufacturers or platforms.[137] Software requires updates and ongoing maintenance and allows manufacturers and platforms to control aspects of use for the duration of the product's lifespan.[138] Third,

130. *See id.* at 967 ("[O]il reservoirs are nonrenewable and groundwater can be renewable. But replenishment of groundwater can be affected by overpumping. Overdraft occurs when recharge of groundwater from precipitation is smaller than groundwater withdrawals.").

131. *Id.* at 936 ("Using examples from natural resource law, this Article highlights the transfers of legal rules and doctrines that occur within a jurisdiction, while also offering a conceptual framework to understand why these transfers occur and why a particular subject matter is copied.").

132. *Id.* at 937.

133. *See, e.g.*, Hoofnagle et al., *supra* note 1, at 788–89 (discussing the problems that result from the design process of tethered devices).

134. *Id.* at 785–86 ("In a worst-case scenario, tethering could produce an environment similar to Terry Gilliam's *Brazil*—a world of homes filled with technology that, for reasons of both complexity and of law, is outside of individual consumer control."); PERZANOWSKI & SCHULTZ, *supra* note 1, at 6 ("You can't resell a product you don't own. You can't lend it, give it away, or donate it. You can't read, watch, or listen on unapproved devices. You can't modify or repair the devices you use.").

135. *See* Bernard Marr, *The 7 Biggest Consumer Technology Trends in 2022*, FORBES (Dec. 7, 2021), https://www.forbes.com/sites/bernardmarr/2021/12/07/the-7-biggest-consumer-technology-trends-in-2022 (last visited Feb. 3, 2024).

136. *Cf.* Shelly Kreiczer-Levy, *Consumption Property in the Sharing Economy*, 43 PEPP. L. REV. 61, 62–63 (2015) [hereinafter Kreiczer-Levy, *Consumption Property*] (discussing the unique category of property that is designed for personal use, as opposed to commercial property, and explaining that "based on values such as self-development, freedom, autonomy, and privacy, certain types of private property have received special treatment and enhanced legal protection, creating the category of 'consumption property'" (footnote omitted)).

137. *See* Kreiczer-Levy, *Reclaiming*, *supra* note 8, at 2.

138. *Id.*

parties to the collaboration are not equal.[139] Large corporations hold tremendous power over users.[140] As the previous Part explains, corporations determine the terms of the transaction and control use, alienability, and repair.[141] Moreover, platforms' power over users has resulted in economic surveillance, privacy infringements, and information asymmetries.[142] Professor Joshua Fairfield compares the power structure to feudalism and consumers to "digital peasants."[143] These three traits point to consumers' vulnerability in technological assets and to corporate control over consumers' daily lives.

To address this vulnerability, regulation must be founded in a normative analysis of property values. There are several justifications for

139. *See, e.g.*, FAIRFIELD, *supra* note 36, at 2 (discussing how corporations are "brazen" digital lords holding the ownership of intellectual property).

140. *See* Banta, *supra* note 2, at 1150; FAIRFIELD, *supra* note 36.

141. *See supra* Part I.

142. *See* Julie E. Cohen, *Law for the Platform Economy*, 51 U.C. DAVIS L. REV. 133, 178 (2017) ("Many lawsuits against platform firms allege information privacy harms. . . . New class complaints alleging information privacy and data security violations are filed seemingly every few weeks and have become enormously controversial. Large information businesses and defense counsel bemoan the purported threats to corporate bottom lines and to processes of information-based 'innovation' more generally."); Ryan Calo & Alex Rosenblat, Essay, *The Taking Economy: Uber, Information, and Power*, 117 COLUM. L. REV. 1623, 1627 (2017) (arguing that platforms "possess deeply asymmetric information about and power over consumers and other participants in the sharing economy" and "are beginning to leverage that power in problematic ways"); Moran Ofir & Ido Sadeh, *ICO vs. IPO: Empirical Findings, Information Asymmetry, and the Appropriate Regulatory Framework*, 53 VAND. J. TRANSNAT'L L. 525, 579–90 (2020) (documenting the information asymmetry in initial coin offerings).

143. FAIRFIELD, *supra* note 36, at 3 ("We must restore everyday property ownership. If we do not take back our ownership rights from software companies and overreaching governments, we will become digital peasants, only able to use our smart devices, our homes, our cars, and even our own software-enabled medical implants purely at the whim of others. Like the serfs of feudal Europe who lacked rights in the land they worked, without digital property rights, we aren't owners – we're owned.").

private property,[144] including freedom,[145] autonomy,[146] personhood,[147] efficiency,[148] and community.[149] When it comes to consumers' property rights vis-à-vis platform control, freedom should be a prominent justification. Property creates a space that is relatively free from the interference of others.[150] It sets boundaries that protect an individual's control from state interference.[151] Professor Charles Reich articulates this claim clearly: "[t]he institution called property guards the troubled boundary between individual man and the state. . . . [I]n a society that chiefly values material well-being, the power to control a particular portion of that well-being is the very foundation of individuality."[152]

Because property protects individuals from state power, Reich called for an expansion of property rights to non-property interests such as state

144. Kreiczer-Levy, *Share*, *supra* note 67, at 159 ("[F]reedom, personhood, community, and efficiency . . . traditionally have been offered as justifications for the institution of private property.").

145. *See* TIMOTHY SANDEFUR, CORNERSTONE OF LIBERTY: PROPERTY RIGHTS IN 21ST-CENTURY AMERICA (2006) (describing the intellectual links between property and individual liberty and critiquing the erosion of freedom in American property); *see also* JEDEDIAH PURDY, THE MEANING OF PROPERTY: FREEDOM, COMMUNITY, AND THE LEGAL IMAGINATION (2010) (arguing that property shapes social life and that community is a precondition of individual freedom); JAMES M. BUCHANAN, PROPERTY AS A GUARANTOR OF LIBERTY 27–31 (Charles K. Rowley ed., 1993) (suggesting that private property provides freedom to enter and exit exchange relationships).

146. DAGAN, LIBERAL THEORY, *supra* note 39, at 41–58 (suggesting that a commitment to autonomy is the dominant justification for property, and arguing that this commitment includes private authority, structural pluralism, and relational justice).

147. *See* Margaret Jane Radin, *Property and Personhood*, 34 STAN. L. REV. 957 (1982) (arguing that attachments to property foster self-development and personhood); ALAN BRUDNER, THE UNITY OF THE COMMON LAW: STUDIES IN HEGELIAN JURISPRUDENCE 34–38 (1995) (discussing Hegel's personhood theory of property); Shelly Kreiczer-Levy, *Property Without Personhood*, 47 SETON HALL L. REV. 771, 772 (2017) ("Property is often justified based on its role in connecting a person to her past and future and communicating her identity. Our home, car, books, furniture, and even toys reflect who we are to our friends and neighbors." (footnote omitted)).

148. *See* Merrill & Smith, *supra* note 25 (arguing that the right to exclude is the foundation of property as it saves information costs and, therefore, serves as a moral core of property).

149. *See* Gregory S. Alexander, *The Social-Obligation Norm in American Property Law*, 94 CORNELL L. REV. 745, 749 (2009) [hereinafter Alexander, *Social-Obligation*] ("[B]oth life in community with others and access to certain kinds of resources are requisites to human flourishing. Property rights and their correlative obligations are cognizable as social goods, worthy of vindication by the state, only insofar as they are consistent with community and human flourishing more generally."); Gregory S. Alexander & Eduardo M. Peñalver, *Properties of Community*, 10 THEORETICAL INQUIRIES L. 127, 128 (2009) [hereinafter Alexander & Peñalver, *Properties*] ("[W]henever we discuss property, we are unavoidably discussing the architecture of community and of the individual's place within it."); *id.* at 128–29 ("[T]he normative theories of community underlying discussions of property are frequently left implicit. This is particularly common in discussions of private ownership, which is to say in most contemporary property scholarship.").

150. *See* Barros, *supra* note 34, at 47–49.

151. Reich, *supra* note 34, at 771–78 (conceptualizing property as protecting the individual from the power of the State).

152. *Id.* at 733.

benefits, licenses, contracts, and franchises.[153] This argument assumes that individuals are mostly vulnerable to state power.[154] Professor Eduardo Peñalver develops this claim, and argues that fifty years after Reich, private power has become a central concern for individual freedom.[155] Peñalver discusses employers and landlords as his key examples and describes the power they hold over individuals.[156] Following Reich, Peñalver asks for a dynamic concept of property that can change according to the source of power that limits individual freedom.[157]

Reich's suggestion was partly adopted by the law, and it resulted in due process procedural protection.[158] The reform did not succeed in offering the same security traditional property rights bestow.[159] Nonetheless, Reich's argument remains compelling today because it is flexible enough to account for varying forms of power. The digital economy marks a new era for private power.[160] Large platforms and manufacturers hold considerable power over individuals in various areas of life.[161] It is time

153. David A. Super, *A New New Property*, 113 COLUM. L. REV. 1773, 1779 (2013) ("Reich proposed that government-created statuses—professional licenses, government employment, public benefits, and the like—should be treated as forms of property. He noted that these often are more valuable to an individual than a house or a bank account . . . ." (footnote omitted)).

154. *See id.* ("Reich focused primarily on the distribution of public largesse, which he regarded as the paramount way, at the time, in which functions that had been performed by property rights were being replaced by bureaucracy.").

155. Eduardo M. Peñalver, Property, Power and Freedom: Reich's "New Property" at Fifty 2 (unpublished manuscript) (on file with author) ("Strikingly absent from contemporary property rights discussions – just as they are in Reich's article and the litigation priorities of property-rights groups – is the potential for private forces to undermine property rights. To whom do owners turn for help fighting off violations of their property rights by other private actors?").

156. *See id.* at 38–41.

157. *Cf. id.* at 28–35.

158. Super, *supra* note 153, at 1780 ("Reich's article reshaped legal debate to a degree that most scholars can only dream about. Its influence reached its apogee in 1970 when, in *Goldberg v. Kelly*, Justice Brennan relied on it to recognize welfare benefits as property interests protected by the Due Process Clauses. *Goldberg* held that individuals have a right to notice and an opportunity for a hearing prior to the termination of welfare benefits." (footnote omitted)).

159. *See id.*

160. *See, e.g.*, Shoshana Zuboff, *Big Other: Surveillance Capitalism and the Prospects of an Information Civilization*, 30 J. INFO. TECH. 75, 75–76 (2015) ("This new form of information capitalism aims to predict and modify human behavior as a means to produce revenue and market control. Surveillance capitalism has gradually constituted itself during the last decade, embodying a new social relations and politics that have not yet been well delineated or theorized."); Cohen, *supra* note 142, at 178 ("Platforms, however, have begun to seem uniquely untouchable.").

161. *See* Hoofnagle et al., *supra* note 1, at 845; Zuboff, *supra* note 160, at 85; Cohen, *supra* note 142, at 141–43; Calo & Rosenblat, *supra* note 142, at 1627; Moran Ofir & Ido Sadeh, *A Revolution in Progress: Regulating P2P Lending Platforms*, 16 N.Y.U. J.L. & BUS. 683, 685 (2020) (noting that regulators now begin to identify concerns with peer to peer lending); Ronit Levine-

that property's role as a protector of freedom evolves to meet the challenges of the technological era.[162] Protection of consumers' property rights follows the footsteps of Reich and Peñalver in their focus on power and vulnerability as a foundation of property values.[163]

Freedom from power is particularly important in personal spaces, where people interact with others in their communities.[164] Control and use of property for personal use, such as the home, the private car, and other everyday goods, supports self-development and personhood and serves as a platform for social and communal ties.[165]

The principle of freedom from power gains significant support from the justification of property as a "commitment to autonomy."[166] Property allows individuals to exert private authority over others with regard to a thing.[167] It empowers individuals to pursue their goals, advance projects, and make future plans.[168] As Professor Hanoch Dagan forcefully argues: "[i]f the private authority of owners serves as a significant self-determination resource, property law cannot be solely dependent on its contribution to the social good. Some sphere of private ownership is imperative in a liberal law even if – say, due to technological advances – eliminating ownership would be welfare-maximizing."[169]

Schnur & Moran Ofir, *Who Shares the Sharing Economy?*, 32 S. CAL. INTERDISC. L.J. 593, 604 (2023).

162. *Cf.* Kreiczer-Levy, *Reclaiming*, *supra* note 8 (considering a restructure of the power relations in technological assets and offering a property model that addresses the unique vulnerability of consumers in AI products).

163. Reich, *supra* note 34, at 787 ("If the individual is to survive in a collective society, he must have protection against its ruthless pressures. There must be sanctuaries or enclaves where no majority can reach. To shelter the solitary human spirit does not merely make possible the fulfillment of individuals; it also gives society the power to change, to grow, and to regenerate, and hence to endure.").

164. *Cf.* Kreiczer-Levy, *Consumption Property*, *supra* note 136, at 68 ("[A] central legal distinction is the divide between property that is designed and purchased for personal use and commercial property. While the latter is exchanged for monetary value, the possession of the former property involves, in some cases, self-development, autonomy, freedom, and privacy. The distinction between these two categories is not explicit, but is supported by a number of theories and doctrines . . . ." (footnote omitted)).

165. *See* Radin, *supra* note 147, at 986 (discussing self-development and personhood in the home and the private car and arguing that there is "a hierarchy of entitlements: [t]he more closely connected with personhood, the stronger the entitlement"); Alexander, *Social-Obligation*, *supra* note 149, at 749; Alexander & Peñalver, *Properties*, *supra* note 149, at 128.

166. *See* DAGAN, LIBERAL THEORY, *supra* note 39, at xii.

167. *Id.* at 60–62.

168. *Id.* at 2 ("[P]roperty does play a distinctive and irreducible role in empowering people. It provides them some temporally extended control over tangible and intangible resources, which they need in order to carry out their projects and advance their plans. The authority that property confers on owners facilitates their ability to determine and pursue their own goals.").

169. *Id.*

The problem with applying these justifications to private power is that private power hinges on consumers' consent, and thus presumably respects consumers' autonomy.[170] If consumers agree to the terms offered by the platform, they relinquish their property rights freely. Consumer consent transforms corporate power into a legitimate form of power that requires no constraint. However, as numerous studies have shown, consent in these cases is flawed for two main reasons. First, consent is often not based on sufficient knowledge.[171] Second, consent is not voluntary because users have very little bargaining power and because different manufacturers and platforms offer functionally similar terms of use.[172] In addition to the problem of flawed consent, the regulation of a new resource should not rely on the agreements made between unequal parties.[173] Rather, it requires normative deliberation that considers the power inequalities and their effect on consumers' freedom and autonomy more broadly.

This analysis of property, autonomy, and freedom illustrates how the lack of strong property rights subjects consumers to corporate power and denies them the necessary control to plan their lives. It also explains the importance of property protection for consumers. The next Part provides guidelines for crafting a property right for consumers that address the unique characteristics of property in the technological era.

III. THE MINIMUM BUNDLE

Scholars routinely criticize consumers' limited control over digital and technological goods as falling short of full ownership.[174] However, a

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170. *Cf.* Vanessa E. Munro, *Constructing Consent: Legislating Freedom and Legitimating Constraint in the Expression of Sexual Autonomy*, 41 AKRON L. REV. 923, 926–35 (2008) (detailing the conventional understanding of consent and discussing its modern challenges).

171. *See, e.g.*, Andrews, *supra* note 37 (analyzing the erosion of consent in the era of phone apps); Solove, *supra* note 27, at 1880 (arguing that reliance on people's own ability to consent to collection and disclosure of their private information "does not provide people with meaningful control over their data"); Richards & Hartzog, *supra* note 27, at 1476–91 (outlining common circumstances when consumer consent is not given according to the ideal legal standard); Lovato et al., *supra* note 27, at 2254–55 (finding that many personal data transactions fall short of the criteria for legitimate consent).

172. *See* Richards & Hartzog, *supra* note 27, at 1488 ("Our point is that most consumers in the digital environment have highly limited options for consent, much less for bargaining. This is particularly the case where monopoly power or something like it applies. Even where there is some choice among services (Lyft versus Uber, for example), those services may offer functionally identical data terms.").

173. Lovato et al., *supra* note 27, at 2255.

174. *See* PERZANOWSKI & SCHULTZ, *supra* note 1, at 2–4 (arguing that technological changes result in the end of ownership); Banta, *supra* note 2, at 1101.

return to full ownership may not be realistic or even desirable.[175] Certain devices require continuous collaborations between consumers and manufacturers post-sale in order to oversee use for safety reasons.[176] Autonomous vehicles and other AI products are key examples.[177]

Ownership as a legal concept is highly disputed.[178] One group of scholars emphasizes ownership's essential qualities.[179] Ownership is the ability to set an agenda for a thing,[180] or the ability to exert hierarchical power over non-owners.[181] Alternatively, ownership's central feature is the right to exclude others from using the thing.[182] These justifications

175. *See* Kreiczer-Levy, *Reclaiming*, supra note 8, at 184 (arguing that "[a] return to full ownership of AI products is impractical and unrealistic").

176. *Id.*

177. *See id.*; Harry Surden & Mary-Anne Williams, *Technological Opacity, Predictability, and Self-Driving Cars*, 38 CARDOZO L. REV. 121, 125–26 (2016) (explaining that autonomous vehicles are less predictable to pedestrians, cyclists, and other drivers on the road compared with human drivers).

178. *See* Katz, *supra* note 25, at 289–95 (arguing that owners are agenda setters for a resource); Merrill & Smith, *supra* note 25 (claiming that the right to exclude is the moral core of ownership); Joseph William Singer, *The Ownership Society and Takings of Property: Castles, Investments, and Just Obligations*, 30 HARV. ENV'T L. REV. 309 (2006) (comparing ownership as absolute domain over property and ownership as a form of investment and rejecting both views); Avihay Dorfman, *Private Ownership*, 16 LEGAL THEORY 1, 16–23 (2010) (discussing the special authority owners have over nonowners); Alexander, *Social-Obligation*, *supra* note 149, at 752–56 (discussing the social obligations inherent in ownership).

179. *See supra* note 178 and accompanying text; *see also, e.g.*, PENNER, *supra* note 25, at 139–57 (discussing use, alienability, and the right to exclude as the core of property); ARTHUR RIPSTEIN, FORCE AND FREEDOM: KANT'S LEGAL AND POLITICAL PHILOSOPHY 86–107 (2009) (arguing that property is about freedom to set purposes and pursue them without the interference of others).

180. Katz, *supra* note 25, at 278 ("An exclusivity-based approach better explains the nature of ownership and also the institutional structure on which it depends. Ownership requires not that others keep out so much as that they fall in line with the agenda the owner has set. The law preserves the exclusivity of ownership not by excluding others but by harmonizing their interests in the object with the owner's position of agenda-setting authority.").

181. DAGAN, LIBERAL THEORY, *supra* note 39, at 60–62 (discussing owners' power as part of the idea of property as promoting autonomy); Dorfman, *supra* note 178, at 3–4 (discussing private owners of property as "special agents who assert their special authority over nonowners"); BRUDNER, *supra* note 147, at 69–77 (discussing the control of the property owner as an expression of will that is manifested in the external world).

182. *See, e.g.*, Merrill & Smith, *supra* note 25, at 1861 ("[T]he starting point in property is to ask whose default package of entitlements—starting with the basic right to exclude—would cover the conflict in question."); PENNER, *supra* note 25, at 139–57 (discussing the right to exclude along with other features of property); *cf.* Henry E. Smith, *Exclusion Versus Governance: Two Strategies for Delineating Property Rights*, 31 J. LEGAL STUD. S453, S454–55 (2002) ("[R]ights fall on a spectrum between the poles of exclusion and governance. The property rights literature following Demsetz has concentrated on rights of exclusion, which are thought to be characteristic of private property. In exclusion, decisions about resource use are delegated to an owner who, as gatekeeper, is responsible for deciding on and monitoring specific activities with respect to the resource.").

provide either a normative or structural explanation for the importance of ownership.[183]

A different approach focuses on the bundle of rights and is purposefully non-essentialist.[184] The bundle of sticks approach has been incredibly influential in American law.[185] Instead of searching for a unique core, this approach looks at the aggregated incidents of property.[186] According to Honoré, full ownership includes: the right to possess; the right to exclude others from all uses or benefits of the thing; the right to use; the right to manage; the right to the income and benefits derived from the thing; the right to capital, which includes the power to alienate the thing, and to consume, waste, modify, and destroy it; the right to security; and the power of transmissibility, including the power to devise or bequeath, the absence of a term for use, the prohibition of harmful use, liability for debt, and residuary character.[187]

These incidents of ownership can be divided in various ways, which serve as a metaphor for the fragmentation of property and its inherent flexibility.[188] Rather than characterizing the rights of consumers or insisting on full ownership, the bundle of rights approach allows us to

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183. *See, e.g.*, Katz, *supra* note 25 (offering a structural argument); DAGAN, LIBERAL THEORY, *supra* note 39, at 2 (making a normative argument in favor of authority).

184. *See* Jane B. Baron, *Rescuing the Bundle-of-Rights Metaphor in Property Law*, 82 U. CIN. L. REV. 57, 58 (2013) ("The bundle-of-rights metaphor captures well the way in which ownership interests can be divided over time, as in the case of present and future interests, and among different people, as in the case of concurrent interests (e.g., joint tenancies) and common interest communities (e.g., condominiums). The bundle-of-rights view also counterbalances an older absolutist picture derived from Blackstone's description of property . . . ."). *See generally* GREGORY S. ALEXANDER, COMMODITY & PROPRIETY: COMPETING VISIONS OF PROPERTY IN AMERICAN LEGAL THOUGHT, 1776–1970, at 319–81 (1997).

185. J.E. Penner, *The "Bundle of Rights" Picture of Property*, 43 UCLA L. REV. 711, 712 (1996) ("The currently prevailing understanding of property in what might be called mainstream Anglo-American legal philosophy is that property is best understood as a 'bundle of rights.'").

186. Baron, *supra* note 184, at 65 ("Whether any of Honoré's enumerated incidents was essential, was, and continues to be, debated—a debate that, in the eyes of some, only reinforces the idea that property is a bundle and that its composition is contingent.").

187. Johnson, *supra* note 72, at 253; Honoré, *supra* note 72, at 112–24; Baron, *supra* note 184, at 64.

188. *See* Adam Mossoff, *What Is Property? Putting the Pieces Back Together*, 45 ARIZ. L. REV. 371, 374 (2003) ("As with any bundle of items—say a shopping bag of fruit, filled with oranges, apples, bananas and peaches—people are free to pack it and rearrange it in whatever way they see fit. A person may take out the apples, for instance, and they still possess a 'shopping bag of fruit.' Moreover, a person may speak about and use the particular items of fruit within the bag without invoking the larger category of 'shopping bag of fruit.' There is nothing essential or necessary about any particular component of the shopping bag of fruit. As applied to the concept of 'property,' the bundle theory maintains that there is 'no essential core of those rights that naturally constitutes ownership.'" (quoting Thomas C. Grey, *The Malthusian Constitution*, 41 U. MIA. L. REV. 21, 30 (1986))). *But see* Dagan, *supra* note 112, at 1532–35 (criticizing the centrality of the bundle of sticks approach to property).

think about the right bundle for consumers regardless of its legal label.[189] Relying on autonomy and freedom from power as a normative foundation,[190] property can protect consumers by defining a minimum bundle that consumers possess in technological products.[191]

In order to shield consumers from corporate power, consumers must have a minimal right to use, alienate, and repair products. These rights represent consumers' authority over the resource and their autonomy to plan their lives free from corporate interference.

A minimal right to use relies on the centrality of use in property law. Use is understood in property theory as a form of extracting value, economic or personal, from a thing.[192] For example, Professor Harold Demsetz argues that property rights promote efficient use.[193] Because owners reap the rewards of their investment in the property, they have a strong incentive to use it efficiently.[194] This view was later criticized by progressive property scholars who argued that the Demsetzian view disregards the personal value that people attach to property, and therefore it devalues use.[195] In addition, property rights can

189. *See* STEPHEN R. MUNZER, A THEORY OF PROPERTY 23 (1990) (explaining that as property is a collection of incidents of rights and liabilities, we can recognize less powerful collections of incidents, such as leases, easements, and some licenses).

190. *See* Reich, *supra* note 34, at 733; DAGAN, LIBERAL THEORY, *supra* note 39, at 2.

191. *But see* Thomas W. Merrill & Henry E. Smith, *Making Coasean Property More Coasean*, 54 J.L. & ECON. S77, S80 (2011) (reconstructing Coase and arguing in favor of property as a baseline, a "more precise[]" argument rather than a bundle of use rights); Dagan, *supra* note 112, at 1519 (arguing that a conception of property as a collection of institutions is a better realist alternative to the bundle of sticks approach).

192. *See infra* notes 193–199 and accompanying text.

193. Harold Demsetz, *Toward a Theory of Property Rights*, *in* CLASSIC PAPERS IN NATURAL RESOURCE ECONOMICS 163, 171 (Chennat Gopalakrishnan ed., 1974) ("If a single person owns land, he will attempt to maximize its present value by taking into account alternative future time streams of benefits and costs and selecting that one which he believes will maximize the present value of his privately-owned land rights. We all know that this means that he will attempt to take into account the supply and demand conditions that he thinks will exist after his death."); *id.* at 163–78; *see also* Thomas W. Merrill, *The Property Strategy*, 160 U. PA. L. REV. 2061, 2074 (2012) ("In effect, whenever productive use of the land required a combination of investment, monitoring, and harvesting, something like the property strategy was recognized among the Native Americans as the mode of organizing the use of resources.").

194. *See* Demsetz, *supra* note 193, at 172 (opining that owners "can generally count on realizing the rewards associated with" making their land more fertile and that the focus on "benefits and costs on owners creates incentives to utilize resources more efficiently").

195. *See* Eduardo M. Peñalver, *Land Virtues*, 94 CORNELL L. REV. 821, 827 (2009) ("The complexity of land—its physical complexity, but more importantly the complex ways in which human beings interact with it—undermines the positive claim that landowners will predictably seek to maximize their land's market returns. Adding to the equation land's 'memory'—by which I mean the combined impact of the durability of land uses and the stabilizing consequences of human sociality—calls into question the normative assessment that owners who do act to maximize the value of their

create opposite incentives in new markets that end up encouraging inefficient use.[196]

Creating the right incentives for efficient use is a priority for some property theorists.[197] This priority adopts an economic, cost-benefit analysis that supports use, provided it promotes efficiency.[198] Additionally, personal use promotes other values, such as the potential for self-development, support for relationships, and autonomy.[199]

The right to use should include the ability to enjoy the product and all its safe functions for a minimum period.[200] During this time, manufacturers should not be able to downgrade the software, remove features, or otherwise remotely disable the product.[201] This rule can be enforced by consumers against manufacturers as a property claim. The exact rule might draw inspiration from the European Directive 2019/771.[202] According to the Directive, there is a presumption

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land are using their land wisely, or at least more wisely than other modes of decision making might hope to accomplish.").

196. Rashmi Dyal-Chand, *Useless Property*, 32 CARDOZO L. REV. 1369, 1373 (2011) ("[I]n disparate markets for new or emerging forms of property, the grant of property rights produces the opposite result from that which he predicted. In these very contexts, the bare fact of ownership does not produce efficient results in part because it does not incentivize use. As a consequence of failures in or deteriorations of use, a fundamental disconnect occurs in the process of developing exchange value. The result is a radical inversion of the virtuous cycles that are anticipated in these markets.").

197. *See, e.g.*, Demsetz, *supra* note 193, at 165–76 (arguing in favor of property rights as a means to promote efficient use).

198. *See* Dyal-Chand, *supra* note 196, at 1371 ("In his exposition of an economic theory of property rights, Harold Demsetz reinforced a foundational assumption in property law: that private ownership is the best way to harness resources for wealth-building purposes."); *see also* Merrill, *supra* note 193, at 2069 ("The owner of an acre of land in rural Arkansas has more discretionary authority over the use of the land than does an owner of an acre of land in Manhattan. The discretionary authority of an owner of an iPad in the United States as to what applications, music, and video clips to load or erase on the device is greater than the discretionary authority of a similar owner in China.").

199. *See* Kreiczer-Levy, *Share*, *supra* note 67, at 194–95, 200–02 (discussing the normative values of access—property use that does not involve title); Radin, *supra* note 147, at 993 (arguing that certain kind of use supports self-development and personhood).

200. *See* Kreiczer-Levy, *Reclaiming*, *supra* note 8, at 213–14 (discussing AI products, particularly robots, and unsafe use).

201. *See* Hoofnagle et al., *supra* note 1, at 811 (describing consumers' dependency on manufacturers). Hoofnagle, Kesari, and Perzanowski also explained that:

> it often means that when a company fails, the products it sold no longer work. Contrast the Centennial Light with the LED bulbs built into the IlluMask light therapy device. Although rated for over 30,000 hours of use, embedded software limits IlluMask bulbs to a mere 15 minutes a day for 30 days. Or consider Emberlight, a company that created network-connected light sockets. After the company shut down, the devices were useless since every request to turn a light off or on had to be processed through the firm's now shuttered cloud service. For tethered products, it is not the wear and tear of physical components, but the business decisions of the seller that often dictate whether a product continues to operate.

Id. (footnotes omitted).

202. *See* Carvalho, *supra* note 101, at 195, 198.

of non-conformity if the product malfunctions within its first two years.[203] Recital 32 to the Directive further states that:

> [i]n order for goods to be in conformity, they should possess the durability which is normal for goods of the same type and which the consumer can reasonably expect given the nature of the specific goods, including the possible need for reasonable maintenance of the goods, such as the regular inspection or changing of filters in a car, and any public statement made by or on behalf of any person constituting a link in the chain of transactions. The assessment should also take into account all other relevant circumstances, such as the price of the goods and the intensity or frequency of the use that the consumer makes of the goods. In addition, insofar as specific durability information is indicated in any pre-contractual statement which forms part of the sales contract, the consumer should be able to rely on them as a part of the subjective requirements for conformity.[204]

This rule is an example of consumer protection regulation that appreciates the complex vulnerability of consumers of hybrid products.[205] This Article suggests that a property claim is a superior mechanism for protecting consumers' right to use. As a property claim, the argument does not rely on consumers' reasonable expectations.[206] Instead, it ensures consumers have authority over the thing they purchased.[207] Without a property claim, consumers are not harmed because they end up with a substandard device.[208] The greater harm to consumers is that limited authority over the use of a thing infringes on their freedom from power

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203. *Id.* at 198.

204. Directive (EU) 2019/771 of the European Parliament and of the Council of 20 May 2019 on Certain Aspects Concerning Contracts for the Sale of Goods, Amending Regulation (EU) 2017/2394 and Directive 2009/22/EC, and Repealing Directive 1999/44/EC, 2019 O.J. (L 136) 28, 33.

205. *See* A. Davola, I. Querci & S. Romani, *No Consumer Is an Island—Relational Disclosure as a Regulatory Strategy to Advance Consumer Protection Against Microtargeting*, 46 J. CONSUMER POL'Y 1, 6 (2023) ("Mandatory information pertains to the main characteristics of marketed products and services, to the obligations of the provider, and to the rights to which her counterparty is entitled; information must be given regarding a product's expected functioning, its modes of use, and its conformity with the contract." (citations omitted)).

206. *Cf.* Carvalho, *supra* note 101, at 198–99 (discussing consumers' reasonable expectations and their role in the European Directive).

207. *See* DAGAN, LIBERAL THEORY, *supra* note 39, at 3 ("[W]hile property writ large is private authority *simpliciter*, *liberal* property conceives of that authority as a means of self-determination. In other words, whereas property systems assign private authority over resources in numerous ways, property law can face its formidable justificatory challenge only if it carefully follows property's autonomy-enhancing function." (emphasis in original)).

208. *See* Hoofnagle et al., *supra* note 1, at 811 (discussing the limitations of tethered devices); PERZANOWSKI & SCHULTZ, *supra* note 1 (comparing rights in personal property to rights in various digital assets, and stressing the limitations of users in using digital goods).

and autonomy.[209] Use of smart cars, appliances, phones, and other devices cannot bolster the private authority required for consumers to plan their lives, advance projects, and pursue goals.[210] Considering the large number of things that people can only partly control in their daily lives,[211] the foundational values that underlie the liberal concept of property are at risk.

The second stick in the consumer bundle is alienability, the ability to freely transfer the product to others. As Neil Netanel explains:

> [a] cardinal incident of what we commonly call ownership is the right to relinquish title to the object of ownership and to direct to whom, if anyone, that title is to be transferred. The owner of a shoe or the holder of a right to receive the winnings of the New York State Lottery may freely sell, give away, or bequeath the shoe or right, or may abandon the shoe or waive the right to the lottery winnings.[212]

Alienability is considered by some scholars as the core of property rights[213] and has been associated with both efficiency[214] and autonomy.[215]

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209. *See supra* Part I.

210. *Cf.* DAGAN, LIBERAL THEORY, *supra* note 39, at 42–44 (discussing private authority as a Razian concept of planning lives and pursuing goals).

211. *See, e.g.*, KUMAR ET AL., *supra* note 9, at 1173 ("The presence of IoT devices varies by region. For example, while more than 70% of homes in North America have an IoT device, fewer than 10% of homes in South Asia do. Media devices (i.e., smart TVs and streaming devices) are the most common type of device in seven of the eleven regions, in terms of both presence in homes (2.5%–42.8%) and total number of devices (16.6%–59.0%). Four regions differ: surveillance devices are most common in South and Southeast Asia, while work appliances are most common in East Asia and Sub-Saharan Africa." (citation omitted)).

212. Neil Netanel, *Alienability Restrictions and the Enhancement of Author Autonomy in United States and Continental Copyright Law*, 12 CARDOZO ARTS & ENT. L.J. 1, 1 (1994) (footnote omitted).

213. Fennell, *supra* note 47, at 1464; *see also* PENNER, *supra* note 25.

214. *See* Tsilly Dagan & Talia Fisher, *Rights for Sale*, 96 MINN. L. REV. 90, 96–97 (2011) ("Under conditions of perfect competition and zero transaction costs, the 'market produces and distributes [commodities] with unsurpassed efficiency and in unsurpassed abundance.' Where no market failures exist, market forces ensure that resources end up in the hands of the highest value users. In the absence of a market, those to whom resources are allocated may initially derive a suboptimal value from their consumption. Put differently, marketability enhances the value of the resource for the initial holder because resources that can be sold are typically worth more than parallel resources that cannot be sold. Marketability is also an efficient mechanism for conveying information as to the potential market value of a given resource." (alteration in original) (footnotes omitted) (quoting ELIZABETH ANDERSON, VALUE IN ETHICS AND ECONOMICS 167 (1993))); *see also* ANDERSON, *supra*; Michael Abramowicz, *The Law-and-Markets Movement*, 49 AM. U. L. REV. 327, 387 (1999) ("The final virtue of market mechanisms is that they tend to allocate goods to their highest valuing users.").

215. *See* Dagan & Fisher, *supra* note 214, at 99–100 ("Alienability and the market enable the fragmentation of resources and allow for conversion of one type of resource into another. In this way, they enhance the spectrum of choice for individuals. The one-dimensional structure of the information regarding the value of a given resource, when translated into market terms, could also improve choice-making capacity by simplifying it. Moreover, alienability and the market allow individuals to discard their social identities, thereby facilitating exit and increasing social mobility." (footnote omitted)).

It allows owners to make choices regarding their property, change their preferences, and enhance the value of a thing by transferring it to a more efficient user.[216]

However, full alienability has not always been an indispensable element of property. Historically, alienability was tied to the move from status to contract, and was entangled with modernity and the departure from the tenets of feudalism.[217] Following this view, Professor Robert Ellickson argues that as groups modernize, they tend to relax restrictions on alienability.[218] Nonetheless, American civic republicans in the eighteenth century approached the topic of alienability with anxiety.[219] Although alienability meant freedom and autonomy for individuals, there was a fear that individuals would be subjected to the power of the market and that self-interest would determine decisions in lieu of the public good.[220] Professor Gregory Alexander articulates this anxiety with regard to the commodification of land: "[i]nterpreted into modern terms, the anxiety was that property, reduced to a mere commodity, would come to dominate social relations. Individuals would relate to each other as interchangeable buyers or sellers in the marketplace rather than as land-holding neighbors and human beings."[221]

The right to transfer property reveals an embedded tension between stability and flexibility in property law.[222] The commodification argument

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216. *See id.*

217. *Cf.* Claire Priest, *Creating an American Property Law: Alienability and Its Limits in American History*, 120 HARV. L. REV. 385, 392 (2006) (explaining and criticizing the common view that "the Anglo-American system of private property emerged from a restrictive feudal regime in which possessory interests in real property were directly tied to the performance of military and other services, and alienation of land was prohibited to safeguard the performance of those services" and noting that the modern private property system's emergence is "often described as a steady march toward free alienability, with the fetters of feudalism removed slowly over the centuries").

218. Robert C. Ellickson, *Property in Land*, 102 YALE L.J. 1315, 1376–77 (1993) ("Modernity, however, fosters alienability. As literacy and engineering advance, human groups can organize state criminal-justice systems and develop other social controls of broad territorial reach. These innovations make villagers less fearful of raids, and better able to screen newcomers and sanction them after they have proven to be uncooperative fly-by-nights. Additionally, land becomes more valuable as population rises, and this scarcity increases the opportunity costs of barring transfers to abler land managers. As groups modernize, they therefore tend not only to lengthen their standard time-spans of land ownership, but also to relax traditional restrictions on transfer.").

219. *See* Gregory S. Alexander, *Time and Property in the American Republican Legal Culture*, 66 N.Y.U. L. REV. 273, 284–87 (1991).

220. *See id.* at 294 ("By debasing the moral personality of individuals and the polity, the free transferability policy would create a new form of dependency. Individuals would be subjects of the market, and the common welfare would be subordinated to the limitless pursuit of self-interest." (footnote omitted)).

221. *Id.* at 292.

222. *See* KREICZER-LEVY, *supra* note 42, at 6.

remains relevant for certain types of resources today.[223] However, technological products are already part of the market, as they are produced, priced, and sold to consumers.[224] Only consumers cannot transfer their property.[225] This limitation interferes with consumers' autonomy to plan and shape their lives and with their freedom to live unencumbered by corporate power.[226] The consumer bundle thus requires that consumers will be able to sell and gift their property.

The right to bequeath protects different values and raises other concerns. Consequently, it is not a necessary incident in the consumer bundle of rights. Property rights during owners' lives protect values such as autonomy, freedom, community, and efficiency.[227] However, these values cannot persist after the owner's death. The power to bequeath property serves a different goal that I have previously characterized as continuity.[228] Continuity is the connection to cultural endeavors that potentially outlive us, such as families, education, tradition, and art.[229] It

223. *See* Fennell, *supra* note 47, at 1405 (arguing that "[s]cholarly debate continues apace about whether particular things, such as human organs or legal rights, should be bought and sold on the open market," but also considering inalienability in cases of holdout problems and resource tragedies).

224. *See, e.g.*, Elvy, *Hybrid Transactions*, *supra* note 20, at 145–48, 165–68 (treating software-embedded goods as transactions and examining the applicability of the Uniform Commercial Code to these transactions); Kim, *Revisiting*, *supra* note 1, at 105 (discussing technological property as part of the market economy); *id.* ("If licensing, rather than selling, becomes the predominant way by which goods are transferred in a market economy, what will the future of innovation look like if tinkerers are legally prohibited from altering the products for which they pay?").

225. *See* Perzanowski & Hoofnagle, *supra* note 2, at 318–19; PERZANOWSKI & SCHULTZ, *supra* note 1, at 2–5.

226. *See supra* Part I.

227. *See* DAGAN, PROPERTY, *supra* note 39, at 46–47.

228. *See* Shelly Kreiczer-Levy, *Property's Immortality*, 23 CARDOZO J.L. & GENDER 107, 109 (2016) [hereinafter Kreiczer-Levy, *Property's Immortality*] ("The value of continuity is therefore foundational to understanding property as a social institution and the legal rules underlying postmortem transfers by wills or intestate succession."); Shelly Kreiczer-Levy, *Inheritance Legal Systems and the Intergenerational Bond*, 46 REAL PROP. TR. & EST. L.J. 495, 498 (2012) [hereinafter Kreiczer-Levy, *Inheritance Legal Systems*] ("[I]nheritance is a property institution that creates and maintains continuity through property. This continuity takes a particular form and is based on the significance of property as an important social and personal symbol."); Shelly Kreiczer Levy & Meital Pinto, *Property and Belongingness: Rethinking Gender-Based Disinheritance*, 21 TEX. J. WOMEN &. L. 119, 121 (2011) ("[W]e set out to explore the limits of testamentary freedom with regard to equality in belongingness to the family. We ask whether the law should protect the donor's discriminatory plan as a matter of public policy, considering the values of dignity, self-respect, autonomy, and participation in the family property and continuity of the family name."); Shelly Kreiczer-Levy, *Can One Inherit a Home as Opposed to a House? A Normative and Comparative Perspective*, 31 ARIZ. J. INT'L & COMPAR. L. 735, 739–40 (2014).

229. *See* Kreiczer-Levy, *Property's Immortality*, *supra* note 228, at 122, 124.

allows individuals to symbolically transcend their mortality.[230] My theory of succession law relies on the value of continuity and supports testamentary freedom.[231] I argue:

> [f]acing her mortality, the giver leaves a bequest as a form of achieving an image of immortality. When a giver leaves property to certain recipients, she remains part of the world. The property she leaves represents her personality, her money represents influence, and by leaving any sort of property she is present in the life of her recipients.[232]

I further argue that succession law should recognize other interests of people who are close to the owner, as continuity is a joint project that cannot be accomplished alone.[233]

The right to bequeath is different from alienability because it does not protect individuals' autonomy to plan their lives or their freedom from power.[234] It is rather about the owner contemplating their death in an attempt to create a legacy.[235] This right is important in a society that values property as a symbol of personhood and relationships.[236] It is contingent on social perceptions of property and death.[237] Therefore, one might argue that in a society that protects the freedom to bequeath, technological products should be bequeathed as well. This is a plausible argument. However, it is distinguishable from the consumers' core control over the assets that property must provide.

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230. *See* Kreiczer-Levy, *Inheritance Legal Systems*, *supra* note 228, at 501–02 ("People attain a meaningful existence—a vision of immortality—through family and relationships, history and symbols, and art and science.").

231. *See* Kreiczer-Levy, *Property's Immortality*, *supra* note 228.

232. *Id.* at 137.

233. *Id.* at 109 ("[C]ontinuity is not only about individual owners seeking to transcend their mortality by controlling property after death. Continuity is equally about potential recipients' connection to their roots.").

234. *Cf.* Reich, *supra* note 34, at 733 (discussing property in the midst of a "government largess"); DAGAN, LIBERAL THEORY, *supra* note 39, at 58–59 (discussing the complex value of autonomy in property).

235. *See* Kreiczer-Levy, *Property's Immortality*, *supra* note 228, at 130; *see also* Kreiczer-Levy, *Inheritance Legal Systems*, *supra* note 228, at 504; Kreiczer-Levy & Pinto, *supra* note 228, at 129–30.

236. *See* Radin, *supra* note 147. *But cf.* Nestor M. Davidson, *Property and Relative Status*, 107 MICH. L. REV. 757, 757 (2009) (arguing that property communicates messages regarding the owner's status).

237. *See* Kreiczer-Levy, *Property's Immortality*, *supra* note 228, at 127 ("Although the argument provides a justification for the institution of postmortem transfers, it does not claim that succession is necessarily and universally normatively desirable. The argument is more modest. Succession is justified in certain legal systems, depending on the role of property in a given society and its attitudes towards death.").

The third incident in the consumer bundle is the right to repair.[238] Consumers today have very limited ability to repair technological products.[239] Manufacturers take advantage of technological products' complexity and limit repair in a variety of legal and technological tools.[240] As Professors Leah Chan Grinvald and Ofer Tur-Sinai explain:

> [m]any manufacturers maintain an "authorized" network of repair shops, which consumers are required to use for repairs during a product's warranty period. Joining the network is typically difficult and expensive. While this practice in itself may be viewed as based on a legitimate concern for quality control, it becomes more troubling when manufacturers couple it with obscure repair information and a refusal to supply replacement parts in the open market. In addition, some manufacturers utilize their intellectual property rights to tighten their control over the repair market for their products.[241]

The purpose of these limitations is to encourage consumers to buy new goods to replace faulty products instead of fixing them.[242] Scholars insist that these limitations impede competition,[243] and raise consumer protection problems,[244] as well as environmental concerns.[245] In recent

238. *See, e.g.*, Hoofnagle et al., *supra* note 1, at 864 ("Although many consumers would find it daunting to repair their own device, a statutory right to repair would facilitate markets for third-party repair services. Such markets, in turn, would drive down prices for new and refurbished goods, improve device longevity, and mitigate the environmental impact of the digital economy." (footnote omitted)).

239. *See* Perzanowski & Hoofnagle, *supra* note 2, at 365–75; Molly de Blanc, *Right to Repair Legislation and Advocacy: 2022 in Review*, ELEC. FRONTIER FOUND. (Dec. 23, 2022), https://www.eff.org/deeplinks/2022/12/right-repair-legislation-and-advocacy-2022-year-review [https://perma.cc/MPM8-9LBT].

240. *See* Grinvald & Tur-Sinai, *Intellectual Property*, *supra* note 18, at 66.

241. *Id.*

242. *See* S. Kyle Montello, *The Right to Repair and the Corporate Stranglehold over the Consumer: Profits over People*, 22 TUL. J. TECH. & INTELL. PROP. 165, 166 (2020) ("The main opponents of right to repair are manufacturers—manufacturers do not want you to repair your products; they want you to buy new ones.").

243. *See, e.g.*, Grinvald & Tur-Sinai, *Intellectual Property*, *supra* note 18, at 67 ("While [placing microscopic trademarks on repair parts] may be technically legal, such use of a trademark to suppress repairs exceeds the traditionally accepted purpose for trademarks, which is to promote competition and assist consumers in identifying the source of good."); Daniel Cadia, Note, *Fix Me: Copyright, Antitrust, and the Restriction on Independent Repairs*, 52 U.C. DAVIS L. REV. 1701, 1705 (2019) ("The manufacturers' conduct sends a clear signal to consumers: they want to be the sole entities reaping the financial benefits of providing repairs by forcing competition out of the market for repairs.").

244. *See* AARON PERZANOWSKI, THE RIGHT TO REPAIR: RECLAIMING THE THINGS WE OWN 199–206 (2022).

245. *See* Grinvald & Tur-Sinai, *Intellectual Property*, *supra* note 18, at 68.

years, consumer organizations have advocated for repair-friendly policies and laws.[246]

This Article adds a property argument in favor of repair. The inability to freely repair technological products effectively limits use. The right to use contributes to owners' authority, and consequently to their autonomy and freedom from power.[247] Moreover, repair is necessary in order to modify the thing so that the product can fit the preferences of each consumer. The ability to modify the property, at least partly, also contributes to the right-holders' autonomy to plan their lives.

The exact rules that support a right to repair exceed the scope of this Article. Crafting these rules requires an in-depth analysis of the boundaries of the right in the technological era.[248] An example of a recent law is the New York Digital Fair Repair Act, which requires original equipment manufacturers (OEMs) to "make diagnostic and repair information for digital electronic parts and equipment available to independent repair providers and consumers if such parts and repair information are also available to OEM authorized repair providers and servicers."[249] Importantly, according to the property approach, the right to repair should consider consumers' ability to control their property.

The property approach thus insists that consumers should hold a minimum bundle of rights in the technological property they purchase. This bundle must include the right to use, the right to alienate the property, and the right to repair, with the specifications crafted to protect consumers' autonomy and freedom from power. Unlike other approaches that may require extensive reforms, the property approach's appeal is its

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246. *E.g.*, *Our Mission and History*, THE REPAIR ASS'N, https://www.repair.org/history [https://perma.cc/3UFV-PATC].

247. *See supra* notes 205–211 and accompanying text.

248. *See, e.g.*, Montello, *supra* note 242, at 168 ("In 2018, Congress passed exemptions to the DMCA that allow consumers the ability to repair certain software-embedded devices without committing copyright infringement. Sadly, these exemptions are extremely narrow and only apply to specific categories including smartphones, home appliances, Internet of Things gadgets, and motorized land vehicles. Further, they do not provide repairers access to manuals, parts, or software tools to circumvent these restrictions for the purpose of repair. The exemptions do, however, provide rights for third-party repair. These exemptions represent the first steps in a long road in the fight for the right to repair." (footnotes omitted)); Grinvald & Tur-Sinai, *Intellectual Property*, *supra* note 18, at 68 ("In the last two years, the movement has seen some success: as of the date of this Article, right to repair bills have been introduced in twenty states. These right to repair laws would require manufacturers of consumer electronics (defined rather broadly) to enable consumers and independent repair shops to repair consumer products. Towards this goal, the legislation would require manufacturers to make available, on fair and reasonable terms, repair information, parts, and tools." (footnotes omitted)).

249. Press Release, Governor Kathy Hochul, Governor Hochul Signs the Digital Fair Repair Act into Law (Dec. 29, 2022), https://www.governor.ny.gov/news/governor-hochul-signs-digital-fair-repair-act-law [https://perma.cc/L8C8-N8NX].

simplicity. It can work with the existing legal structure. Because the property approach presented in this Article is non-essentialist, even if consumers formally only have a license to use, the consumer bundle nonetheless dictates a minimal right to use, alienate, and repair.

CONCLUSION

Consumers' vulnerability in the technological age has been a source of concern in legal scholarship.[250] This vulnerability includes the inability to negotiate the terms of EULAs or even understand them,[251] the loss of privacy and economic surveillance,[252] and the terms limiting consumers' ability to use, transfer, and repair digital and technological property.[253]

In their book *The End of Ownership*, Aaron Perzanowski and Jason Schultz identify the property problem created by limitations on use and alienability and offer solutions based on intellectual property law.[254] They also present a consumption choice between two alternatives: a physical thing with complete ownership and less flexibility (book) or a digital asset with a license and flexibility (ebook).[255] Others have discussed a similar problem from different perspectives.[256]

Against this background, this Article offers a simple yet powerful solution: consumers should have a minimum bundle of property rights, including the right to use, to alienate the property, and to repair it. This solution draws on two property principles. The bundle of sticks approach allows for the composition of various property forms,[257] and property forms are standardized because of their effect on third parties and the public.[258] Technological property should be understood as a new property

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250. *See* Kim, *Revisiting*, *supra* note 1, at 101; Elvy, *Hybrid Transactions*, *supra* note 20, at 82–83; Uri Benoliel & Shmuel I. Becher, *Termination Without Explanation Contracts*, 2022 U. ILL. L. REV. 1059, 1062–63; Solove, *supra* note 27, at 1880.

251. *Cf.* Richards & Hartzog, *supra* note 27, at 1466; Andrews, *supra* note 37, at 14.

252. *See* Woodrow Hartzog & Neil Richards, *Privacy's Constitutional Moment and the Limits of Data Protection*, 61 B.C. L. REV. 1687, 1693–94 (2020). Credit reports used in lending are also increasingly enhancing a surveilling culture characterized by less privacy with "exchanged messages, tagged photos, browsing habits, education, searches, and geo-spatial data from mobile phones" used to monitor, score, and rate consumers. *See* Nizan Geslevich Packin & Yafit Lev-Aretz, *On Social Credit and the Right to be Unnetworked*, 2016 COLUM. BUS. L. REV. 339, 344.

253. *See* Perzanowski & Hoofnagle, *supra* note 2, at 318; Hoofnagle et al., *supra* note 1, at 811–14, 864.

254. *See* PERZANOWSKI & SCHULTZ, *supra* note 1.

255. *See id.* at 2–3.

256. *See, e.g.*, FAIRFIELD, *supra* note 36, at 3, 19 (discussing the lack of consumer property rights).

257. *See* Baron, *supra* note 184; Johnson, *supra* note 72; Honoré, *supra* note 72.

258. *See* Davidson, *supra* note 236, at 1602.

form, and this form should be regulated. Its regulation as a minimum bundle is justified based on property values.[259]

This Article offers the structure for a new property form and serves to demonstrate the potential of a rich analysis at the intersection of property and consumption.

259. *See* Peñalver, *supra* note 155, at 2; Reich, *supra* note 34, at 733; DAGAN, LIBERAL THEORY, *supra* note 39, at 2; Radin, *supra* note 147, at 957; Alexander & Peñalver, *Properties*, *supra* note 149, at 128.