Washington and Lee Law Review

Volume 74 | Issue 1 Article 8

1-1-2017

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Daniel Martin, *Dispersing the Cloud: Reaffirming the Right to Destroy in a New Era of Digital Property*, 74 Wash. & Lee L. Rev. 467 (2017), https://scholarlycommons.law.wlu.edu/wlulr/vol74/iss1/8

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Dispersing the Cloud: Reaffirming the Right to Destroy in a New Era of Digital Property†

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Table of Contents

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† This Note received the 2016 Roy L. Steinheimer Award for outstanding student Note.

* Candidate for J.D., Washington and Lee University School of Law, May 2017. I must thank Professor Joshua A.T. Fairfield, whose expertise and advice made this Note possible; the Washington and Lee Law Review Editorial Board, particularly Kelton Frye, Charlotte Rhodes, and Brooke Weedon, for their many edits, suggestions, and (especially) Bluebook corrections; and my parents, Lauren and William Martin, for their unwavering support in this and all my endeavors. I also extend my sincerest gratitude to Professor Fairfield and Professor Aaron Perzanowski for their insightful commentary on this Note and for speaking at W&L's Student Notes Colloquium. Finally, I would like to give a special shout-out to the virtual community of *Exodar-US*, *World of Warcraft*, without whom my interest in digital and virtual property might have never developed.

I. Introduction

Since October 30, 2006, blender manufacturer and seller Blendtec has advertised its products on the internet by positing a largely rhetorical question: *Will It Blend?*[1] The premise is ingeniously (and humorously) simple: Blendtec founder and CEO Tom Dickson shows firsthand the power of his company's blenders by blending unconventional items, from toy cars[2] to cans of soup.[3] In a 2014 episode, the featured item was a brand new iPhone 6 Plus.[4] The video proved popular,[5] but reactions, unsurprisingly, were mixed. Some skeptics remained

1. *See* Christian Briggs, *BlendTec Will It Blend? Viral Video Case Study*, SOCIALENS (Jan. 2009), http://www.socialens.com/wp-content/uploads/2009/04/20090127_case_blendtec11.pdf ("In 2006, Blendtec's relatively new Director of Marketing launched a viral video campaign in which the company's CEO blended up various non-food items in Blendtec blenders.").

2. Blendtec, *Will it Blend? – Toy Cars*, YOUTUBE (Dec. 19, 2006), http://www.youtube.com/watch?v=ZNbzmdYRRmg (last visited Mar. 6, 2017) (on file with the Washington and Lee Law Review).

3. Blendtec, *Will it Blend? – Cup of Soup*, YOUTUBE (Dec. 26, 2006), http://www.youtube.com/watch?v=3OmpnfL5PCw (last visited Mar. 6, 2017) (on file with the Washington and Lee Law Review).

4. Blendtec, *Will it Blend? – iPhone 6 Plus*, YOUTUBE (Sept. 23, 2014), http://www.youtube.com/watch?v=lBUJcD6Ws6s (last visited Mar. 6, 2017) (on file with the Washington and Lee Law Review).

5. As of January 28, 2017, the video had 5,566,676 views. *Id.*

unconvinced that the blended iPhone was real,[6] some appreciated the humor,[7] and some expressed, with varying degrees of clarity, outrage at the sight of Mr. Dickson quite literally reducing a piece of technology worth hundreds of dollars to dust.[8] Of course, these responses were largely visceral. They are, however, fairly representative of the intellectual climate surrounding the property right underlying Blendtec's attempt to promote its products: the much-maligned right to destroy.[9]

Though traditionally recognized as a fundamental property right,[10] the right to destroy has in recent decades come under attack.[11] Congress has restricted the right with respect to artistic creations,[12] courts have carved out several public policy exceptions to the exercise of the right,[13] and some commentators have called for either its partial or total abrogation, primarily on the basis of waste.[14] The right has few defenders; to the extent it

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6. One YouTube user, "Maria Ammerlaan," commented: "You can clearly tell the iphone is a fake." *Id.*

7. For instance, a YouTube user going by the handle "Ds Vic" considered the video the "[b]est thing [he'd] seen this year," adding: "LOL." *Id.*

8. "CocoCheryl GT," for example, asked: "why watse a perfectly good iphone???? i wuld be playing instead of crushing it. stop. nov body thinks this is entertainment. its just a waste of time and money [*sic*]!!!" *Id.* "Carter Stanley," however, had a milder reaction: "I love your videos. I just get kinda angry when u blend really expensive stuff [*sic*]." *Id.*

9. *See generally* Lior Jacob Strahilevitz, *The Right to Destroy*, 114 YALE L.J. 781 (2005) (discussing arguments against and justifications for the right to destroy).

10. *See* JOHN G. SPRANKLING, UNDERSTANDING PROPERTY LAW § 1.03(B)(5) (2012) [hereinafter SPRANKLING, UNDERSTANDING PROPERTY] (including the right to destroy among the "bundle of rights" afforded by property law).

11. *See infra* Part II.C (discussing actual and proposed limits on the right to destroy).

12. *See* Visual Rights Act of 1990, 17 U.S.C. § 106A (2012) (granting "the author of a work of visual art . . . the right . . . to prevent any intentional distortion, mutilation, or other modification of that work").

13. *See, e.g.*, Eyerman v. Mercantile Trust Co., N.A., 524 S.W.2d 210, 217–18 (Mo. Ct. App. 1975) (refusing to enforce a will providing that the testator's home would be destroyed upon her death).

14. *See, e.g.*, Edward J. McCaffery, *Must We Have the Right to Waste?*, *in* NEW ESSAYS IN THE LEGAL AND POLITICAL THEORY OF PROPERTY 76, 77 (Stephen R. Munzer ed., 2001) (arguing "against the continuance of the" right to destroy on the ground that it does not mesh with Anglo-American values); Kellen Zale,

is not challenged the right to destroy has been largely forgotten, sparsely receiving scholarly attention.[15] Even *Black's Law Dictionary* has seemingly swept the right to destroy under the rug.[16]

This treatment might make some sense within the realm of tangible property, especially real property, the context in which the right is usually challenged.[17] After all, why should we, as a society of finite resources, tolerate the destruction of some of these resources at the whim of their owners? But property evolves. What was once physical can now be digital.[18] And digital property, though once primarily stored on local memory drives, is now often stored on "the cloud"—that is, on servers maintained by third-parties—meaning that they can be accessed through any device with internet connectivity.[19] When it comes to such

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The Government's Right to Destroy, 47 ARIZ. ST. L.J. 269, 316–17 (2015) (concluding that the government ought to have a broader right to destroy than private citizens).

15. *See* Strahilevitz, *supra* note 9, at 794 (noting that "few scholars devoted much attention to the right to destroy" compared to "the right to exclude, the right to alienate, the right to use, the right to testamentary disposition, the right to mortgage, and the like").

16. *See Owner*, BLACK'S LAW DICTIONARY (10th ed. 2014) (defining "owner" as one "who has the right to possess, use, and convey something"). Prior to the 1999 seventh edition, Black's Law Dictionary defined "owner" more broadly to include the "right to enjoy and do with [his property] as he pleases, even to spoil or destroy it, as far as the law permits." Strahilevitz, *supra* note 9, at 783 (quoting *Owner*, BLACK'S LAW DICTIONARY (6th ed. 1990)).

17. *See* Strahilevitz, *supra* note 9, at 796 ("[T]he most prominent set of cases prompting concerns about waste involve efforts by landowners to destroy their homes via will.").

18. *See, e.g.*, RayMing Chang, *Why the Plain View Doctrine Should Not Apply to Digital Evidence*, 12 SUFFOLK J. TRIAL & APP. ADV. 31, 32 n.1 (2007) (defining "digital property" as the "digital data contained on computers and other electronic storage devices").

19. *See* PETER MELL & TIMOTHY GRANCE, U.S. DEP'T OF COMMERCE, THE NIST DEFINITION OF CLOUD COMPUTING: RECOMMENDATIONS OF THE NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY 2 (2011), http://nvlpubs.nist.gov/nistpubs/Legacy /SP/nistspecialpublication800-145.pdf (noting that one of the "essential characteristics" of cloud-maintained data is that it can be "accessed through standard mechanisms that promote use by . . . mobile phones, tablets, laptops, and workstations").

property, the problem is not ensuring preservation but confirming destruction.[20]

Storing our files—videos, songs, games, and documents—on the cloud offers unprecedented convenience.[21] Convenience, however, has its costs. The rapid adoption of cloud-based storage services threatens two related but distinct aspects of property ownership: control and peace of mind.[22] The right to destroy once arguably served to protect these interests: it (1) allowed the property owner to have exclusive say in the ultimate fate of her property and (2) gave the property owner complete certainty that no other would, or could, use the property.[23] By contrast, in the world of the cloud, control is shared with a third-party[24] and certainty is displaced by faith.[25]

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20. *See infra* Part V.A–B (discussing the resiliency of electronic data).

21. *See* DARREN QUICK ET AL., CLOUD STORAGE FORENSICS 1–2 (2013) (discussing the "marked increase in the adoption of cloud computing"); Kevin McGillivray, *Conflicts in the Cloud: Contracts and Compliance with Data Protection Law in the EU*, 17 TUL. J. TECH. & INTELL. PROP. 217, 218 (2014) ("Cloud computing allows businesses, governments, and consumers to outsource their computing needs in an efficient and cost-effective manner."). Indeed, this very Note has been stored on Google Drive throughout the entire writing process.

22. *See, e.g.*, JOSHUA A.T. FAIRFIELD, OWNED: PROPERTY, PRIVACY, AND THE NEW DIGITAL SERFDOM (forthcoming 2017) [hereinafter FAIRFIELD, OWNED] (manuscript at 9) (on file with author) ("We recognize instinctively that property represents our ability to control the world around us."); Richard A. Posner, *Pragmatic Liberalism Versus Classical Liberalism*, 71 U. CHI. L. REV. 659, 664 (2004) (discussing the view of equating "the right to own property" with "the right, in effect, to own one's body and one's peace of mind"); *see also infra* Part IV (discussing how these problems arise in the context of cloud-maintained digital property).

23. *See* Strahilevitz, *supra* note 9, at 794–95 (discussing the justifications for recognizing the right to destroy and noting that "we might understand the right to destroy as an extreme right to control subsequent alienation").

24. *See* McGillivray, *supra* note 21, at 220 (noting that cloud users store data "on servers over which they have little or no control").

25. *See* CHRIS JAY HOOFNAGLE, CONSUMER PROTECTION IN CLOUD COMPUTING SERVICES: RECOMMENDATIONS FOR BEST PRACTICES FROM A CONSUMER FEDERATION OF THE US RETREAT ON CLOUD COMPUTING 9 (2010), http://www.consumerfed.org/pdfs/Cloud-report-2010.pdf ("A 2008 Pew Internet & American Life Project report elucidated consumers' biggest concerns about cloud services . . . . Sixty-three percent would be very concerned if the cloud provider kept files after the consumer attempted to delete them.").

Perhaps a hypothetical would help to illustrate the point. In 1975, a photographer displeased with her photograph need only burn it to exercise her right to destroy. She could see and smell and sift through the ashes, and know that her right to destroy had been successfully exercised. In 2000, a photographer displeased with her digital image need only delete the file and overwrite the storage device (or, for 100% certainty, smash it into pieces).[26] She too could confirm the success of her destructive act. Will this pattern hold for the year 2025?[27] Probably not, because the owner of digital property maintained on the cloud will be able to use only whatever deletion mechanism her cloud storage service provides and hope that her wishes are fulfilled.[28] It may appear to her that the file has disappeared, as commanded.[29] She cannot, however, be sure that it is gone.[30] After all, the cloud storage provider may be secretly keeping the file for itself.[31] Or

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26. *See* Jason Krause, *Guarding the Cyberfort*, 89 A.B.A. J. 42, 46 (2003) (discussing programs used for "destroying data"). According to an expert, "[t]he only way to completely erase a hard drive is to take it out of the computer and smash it with a hammer." *Id.*

27. Of course, we do not know what the year 2025 will hold, but "[m]any in the tech industry see the cloud as the definitive future of digital storage." Alen Peacock, *What Cloud Storage's Changing Forecast Means for Your Data*, FORBES (June 4, 2015), http://www.forbes.com/sites/ciocentral/2015/06/04/what-cloud-storages-changing-forecast-means-for-your-data (last visited Mar. 6, 2017) (on file with the Washington and Lee Law Review).

28. *See* Daniel J. Gervais & Daniel J. Hyndman, *Cloud Computing: Cloud Control: Copyright, Global Memes and Privacy*, 10 J. ON TELECOMM. & HIGH TECH. L. 53, 79 (2012) (noting that it is "up to the user . . . to trust that the provider will delete her information"); McGillivray, *supra* note 21, at 234 ("Once information is uploaded to the cloud, it becomes very difficult, if not impossible, to control, track, or delete.").

29. *See, e.g.*, *Delete Files in Dropbox*, DROPBOX HELP CTR., http://www.dropbox.com/en/help/40 (last visited Mar. 6, 2017) (instructing users how to delete their files stored on Dropbox's servers) (on file with the Washington and Lee Law Review).

30. *See infra* Part IV.B (discussing the uncertainty facing users of cloud services).

31. Returning to Dropbox, its terms of service contain the following provision:

> We'll retain information you store on our Services for as long as we need it to provide you the Services. If you delete your account, we'll also delete this information. But please note: (1) there *might be some latency* in deleting this information from our servers and back-up

perhaps the digital property exists elsewhere, in one form or another.[32] The bottom line is that the peace of mind once generated by the inherent finality of an act protected by the right to destroy is absent—lost, as it were, in the clouds.[33]

This Note argues that the increasing prevalence of cloud computing provides a new context for reexamining, and a new justification for reaffirming, the right to destroy.[34] Part II discusses the origin and development of the right to destroy and the current state of the right within American property law's "bundle of rights."[35] Part III begins with an overview of digital property generally and then examines in more detail the nature of cloud computing, specifically cloud storage.[36] Part IV explains why the inability to delete cloud-maintained data is a problem.[37] Finally, Part V answers some of the criticisms levied at the right to destroy by showing their inapplicability to digital property and describes this Note's suggested approach to reclaiming the right to destroy in the world of the cloud.[38]

> storage; and (2) *we may retain this information* if necessary to comply with our legal obligations, resolve disputes, or enforce our agreements.

Dropbox Privacy Policy, DROPBOX, http://www.dropbox.com/privacy (last updated Oct. 3, 2016) (last visited Mar. 6, 2017) (emphasis added) (on file with the Washington and Lee Law Review).

32. *See* Gervais & Hyndman, *supra* note 28, at 71 ("While information stored on a personal computer is at risk and evanescent, once firmly rooted in the Cloud, information is much harder to delete.").

33. *See supra* notes 22–26 and accompanying text (discussing the underlying benefits of the right to destroy and the threat the cloud storage model poses to these benefits).

34. For an excellent defense (and one of the few exhaustive treatments) of the right to destroy in a more traditional context, see generally Strahilevitz, *supra* note 9.

35. *See infra* Part II (providing an overview of the history of the right to destroy, its development in the case law, and its treatment by scholars).

36. *See infra* Part III (discussing competing definitions of digital property and cloud computing and why people began using cloud storage services).

37. *See infra* Part IV (arguing that the cloud storage model interferes with a property owner's control over her property and thereby diminishes the peace of mind property rights have traditionally provided to owners).

38. *See infra* Part V (providing both a theoretical and practical solution to maintaining control over digital property stored in the cloud).

II. The Origin and Development of the Right to Destroy

A. Ancient Roots

The right to destroy cannot be found in any modern code or constitution; it is instead "implicitly recognized in all legal systems."[39] This was not always so. Millennia ago, the law of Ancient Rome expressly provided property owners with very broad rights: "*jus utendi fruendi abutendi*."[40] In English, this phrase encompasses "the rights to use the [property,] . . . to use the income generated by the property, or to *completely consume and destroy the property*."[41] It is thus within this absolutist view of property ownership that the right to destroy finds its roots.[42]

The Romans probably did not have any special preference for destruction.[43] The most likely explanation for the *jus abutendi* is that it necessarily justified "lesser" property rights.[44] In other words, if an owner had the right to destroy her property, it followed that the owner had the right to use, sell, give, devise, or exclude that property from other persons.[45] This makes a great deal of sense. The right to destroy probably was, as it seems

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39. JOHN G. SPRANKLING, THE INTERNATIONAL LAW OF PROPERTY 293 (2014) [hereinafter SPRANKLING, INTERNATIONAL LAW].

40. Strahilevitz, *supra* note 9, at 787.

41. *Id.* (emphasis added).

42. *See* Max Radin, *Fundamental Concepts of the Roman Law*, 13 CALIF. L. REV. 207, 209 (1925) (noting that a Roman had the right "of completely consuming [his property] and therefore ending its effective existence"); Strahilevitz, *supra* note 9, at 787–88 (discussing the origins of the right to destroy in Roman law).

43. Indeed, although Roman law generally recognized the right to destroy, it limited the right in certain classes of property: "slaves and land." Radin, *supra* note 42, at 210.

44. *See* Strahilevitz, *supra* note 9, at 785 (noting that "the right to destroy . . . served the important function of demarcating the boundaries of an owner's rights in property").

45. *See id.* at 788 ("A few early American courts picked up the notion of the *jus abutendi* and . . . suggested that if a landowner had the right to destroy property, he certainly had the right to use or dispose of it in a less dramatic manner.").

today, largely symbolic.[46] A property owner does not typically desire to actually destroy her valuable property.[47]

This characteristic, however, does not diminish the importance of, or the need for, the right to destroy. The *jus abutendi* provided security to Roman property owners, guaranteeing to them that they, and no other, had control over their property, that the ultimate fate of the property was in their hands.[48] Although Anglo-American concepts of property and property ownership have certainly changed since the time of the Roman Empire,[49] this principle underlying Roman law's recognition of the right to destroy is just as relevant today as it was millennia ago.[50]

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46. *See* Radin, *supra* note 42, at 210 (observing that "it may be seen that the [*j*]*us utendi fruendi abutendi*, by virtue of its climactic arrangement, is rather an *analysis of the idea of ownership* than a real statement of what the elements of Roman dominium actually were" (emphasis added)).

47. As to why this is the case, Professor Strahilevitz succinctly articulates the obvious: "A new homeowner is more likely to want to exclude outsiders from his home than he is to want to raze it." Strahilevitz, *supra* note 9, at 794. On the other hand, property that we routinely destroy is typically disposed of without controversy. *See* SPRANKLING, INTERNATIONAL LAW, *supra* note 39, at 293–94 (2014) (noting that many "things subject to ownership will be destroyed as part of a consumptive process that benefits their owners").

48. *See* Strahilevitz, *supra* note 9, at 794 (viewing the right to destroy as an "extreme exercise of some of the more widely recognized sticks in the bundle of rights").

49. For instance, Roman law knew nothing of intellectual property. *See* John F. Duffy, *Harmony and Diversity in Global Patent Law*, 17 BERKELEY TECH. L.J. 685, 710 (2002) ("Legal protection of inventions (or, for that matter, other categories of intellectual property) simply did not exist in Roman or Hellenistic law."). Moreover, only certain classes of people in Ancient Rome were capable of owning property. *See, e.g.*, A. H. F. Lefroy, *Rome and Law*, 20 HARV. L. REV. 606, 609 (1907) (noting that "all the members of the family being left under the despotic control of the head of the family, [they were] . . . incapable of acquiring or owning property in their own right and on their own behalf").

50. *See infra* Part IV.A (discussing the relationship between property rights and control over property).

B. At Common Law

As with much of our jurisprudence,[51] American property law's counterpart to the *jus abutendi*—the right to destroy—descends from the common law of England.[52] If one were to rely solely on the writings of the famous English jurist Sir William Blackstone,[53] one might conclude that English common law enshrined property rights above all others. To him, the "right of property" was "that sole and despotic dominion which one man claims and exercises over the external things of the world, in total exclusion of the right of any other individual in the universe."[54]

Like the Romans before him, Blackstone viewed property rights as absolute.[55] It is therefore not surprising that Blackstone (and English law) recognized the right to destroy.[56] This is most obvious in Blackstone's discussion of the crime of arson, where the right to destroy is implicitly recognized.[57] In his fervent way

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51. *See, e.g.*, ZEPHANIAH SWIFT, A DIGEST OF THE LAW OF EVIDENCE, IN CIVIL AND CRIMINAL CASES, AND A TREATISE ON BILLS OF EXCHANGES AND PROMISSORY NOTES vii (1810) ("[O]ur progenitors brought [the common law] with them from England, and made it, by adoption, their own, as much as the language they spoke.").

52. *See* Strahilevitz, *supra* note 9, at 787–91 (tracing the history of the right to destroy from Rome to England and finally to the United States).

53. *See generally Sir William Blackstone*, ENCYCLOPÆDIA BRITANNICA (Apr. 7, 2008), http://www.britannica.com/biography/William-Blackstone (last visited Mar. 6, 2017) (providing a biography of William Blackstone) (on file with the Washington and Lee Law Review).

54. 2 WILLIAM BLACKSTONE, COMMENTARIES *2.

55. *See* 1 WILLIAM BLACKSTONE, COMMENTARIES *134–35 ("So great moreover is the regard of the law for private property, that it will not authorize the least violation of it; no, not even for the general good of the whole community."). The evidence suggests his writings were representative of English common law. *See* JAMES W. ELY, JR., THE GUARDIAN OF EVERY OTHER RIGHT: A CONSTITUTIONAL HISTORY OF PROPERTY RIGHTS 17 (3d ed. 2008) (noting that "Blackstone's *Commentaries* were widely studied as a summary of English law").

56. *See* 3 WILLIAM BLACKSTONE, COMMENTARIES *223–24 (explaining that "if a man be the absolute tenant in fee-simple . . . he may commit whatever waste his own indiscretion may prompt to, without being impeachable or accountable for it to any one").

57. *See, e.g.*, Paul Jr. Sadler, *The Crime of Arson*, 41 J. CRIM. L. & CRIMINOLOGY 290, 291 (1950) (discussing the connection between an owner's right to destroy her property and the restriction of arson to the malicious

of speaking, Blackstone decried the crime as "an offense of very great malignity, and much more pernicious to the public than simple theft."[58] Yet he acknowledged that a property owner was entirely free to burn down her own house, subject to limited exceptions.[59]

Likewise, American common law tended to view property ownership in absolute terms.[60] For instance, the first edition of *Black's Law Dictionary*, published in the late nineteenth century, defined property as "the *unrestricted* and *exclusive* right to a thing."[61] Although disputes regarding the right to destroy are relatively uncommon,[62] a few early American cases discussed and recognized the right.[63] Courts implicitly recognized the right to destroy in the arson context,[64] mirroring England's treatment of the crime.[65] More directly, the court in *United States v. Vanranst*[66] explained that an "owner might destroy his own property himself, or cause it to be done, without committing an offence."[67] Another court, in *Kingsbury v.*

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burning of "the dwelling of *another*"); Strahilevitz, *supra* note 9, at 788 ("The common law's purported embrace of the *jus abutendi* is more precisely indicated in Blackstone's discussion of arson.").

58. 3 WILLIAM BLACKSTONE, COMMENTARIES *220.

59. *See id.* at *221–22 (noting that, "if no mischief is done but to one's own [property], it does not amount to felony," unless the owner-arsonist is leasing the property to a tenant).

60. *See, e.g.*, Daniel Raymond, *Law Reform in Regard to Real Estate*, 3 W. L.J. 385, 390 (1846) (acknowledging "that a man's right to property, to which he has acquired a legal title, is absolute and unqualified").

61. *Property*, BLACK'S LAW DICTIONARY (1st ed. 1891) (emphasis added).

62. *See supra* note 47 and accompanying text (explaining why there are so few cases challenging the right to destroy compared to other property rights).

63. *See infra* notes 64–69 and accompanying text (discussing cases invoking the right to destroy).

64. *See, e.g.*, Bloss v. Tobey, 19 Mass. 320, 325 (Mass. 1824) (finding that destroying one's property by fire, "unaccompanied by an injury to, or by a design to injure, some other person, is [not] criminal").

65. *See supra* notes 57–59 and accompanying text (discussing Blackstone's views on the crime of arson at English common law).

66. 28 F. Cas. 360 (C.C.D. Pa. 1812) (concerning the destruction of a shipping vessel).

67. *Id.*

Whitaker,[68] invoked the right to destroy to uphold the validity of a will.[69]

By the twentieth century, the right to destroy seemed firmly entrenched as a "stick" in the "bundle of rights" that came to define property ownership.[70] American courts continued to state that a person could not be convicted of arson merely for burning down her own property[71] and invoked the right to destroy in other various contexts.[72] Scholars, moreover, routinely listed the right to destroy as a fundamental incident of ownership.[73] Indeed, *Black's Law Dictionary* included among the rights of a property owner the right "to spoil or destroy it, as far as the law permits,"[74] at least until 1999.[75] As Professor Strahilevitz noted, this revision was "neither an accident nor an outlier."[76] The next subpart explores why that is so.

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68. 32 La. Ann. 1055 (La. 1880).

69. *See id.* at 1062 (noting that a property owner "may destroy and annihilate that which belongs to him," and thus questioning "why" a testator "should not have the right of determining its disposition after his death").

70. *See* 63C AM. JUR. 2D *Property* § 1 (2008) (discussing property rights through the bundle of sticks metaphor); UNDERSTANDING PROPERTY, *supra* note 10, at § 1.03(B) (same).

71. *See, e.g.*, Marchese v. United States, 126 F.2d 671, 675 (5th Cir. 1942) (recognizing "that common law offenses against private property such as burglary, larceny, arson, and malicious mischief [do] not apply to an owner dealing with his own property"); Jones v. State, 70 N.E. 952, 953 (Ohio 1904) (acknowledging that Ohio's arson statute "did not make it an offense to burn one's own building").

72. *See, e.g.*, Cass v. Home Tobacco Warehouse Co., 223 S.W.2d 569, 571 (Ky. 1949) (denying punitive damages because defendants "thought they had the right to destroy the building" because they believed they owned the property and thus "their acts were not malicious or wanton").

73. *See, e.g.*, George H. Weinmann, *A Survey of the Law Concerning Dead Bodies*, *in* 73 BULLETIN OF THE NATIONAL RESEARCH COUNCIL 21 (1929) (listing the right to destroy among other "important incidents of ownership"); J.E. Penner, *The "Bundle of Rights" Picture Of Property*, 43 UCLA L. REV. 711, 741 (1996) (including the right to destroy in the "bundle of rights"); Roscoe Pound, *The Law of Property and Recent Juristic Thought*, 25 A.B.A. J. 993, 997 (1939) (recognizing the right to destroy as one of six property rights).

74. *Owner*, BLACK'S LAW DICTIONARY 1105 (6th ed. 1990).

75. *See* Strahilevitz, *supra* note 9, at 783 (observing that the seventh edition of *Black's Law Dictionary* removed any reference to the right to destroy).

76. *Id.* at 784.

C. Limitations of the Right

The right to destroy occupied a strange place in Anglo-American law because it was implicitly recognized but rarely acknowledged.[77] Then, in the late twentieth century and up to the present, courts and commentators began to reexamine the right to destroy.[78] To one degree or another, these new appraisals tended to advocate limitations on the right.[79]

1. Caselaw Exceptions

Although courts rarely adjudicate the question,[80] there are some instances in which they have curtailed the right to destroy.[81] Many courts have refused to enforce provisions in wills calling for the destruction of the testator's real property.[82] Of this line of cases, *Eyerman v. Mercantile Trust Co.*[83] is probably the most famous.[84] Judge Rendlen, writing for the Missouri Court of

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77. *See* SPRANKLING, INTERNATIONAL LAW, *supra* note 39, at 293 ("Despite its fundamental nature, the right to destroy is rarely made explicit in municipal law."); Strahilevitz, *supra* note 9, at 787 ("The right to destroy evidently received more attention in antiquity than it does today.").

78. *See* Strahilevitz, *supra* note 9, at 784 (discussing late-twentieth century cases examining the right to destroy); *id.* at 794 (noting that "few scholars had devoted much attention to the right to destroy" prior to the publication of two works in 1999 and 2001).

79. *See id.* at 786 ("In the twentieth century, the right to destroy fell out of favor, and the most recent literature has argued that such a right, if it exists at all, should be substantially circumscribed on public policy grounds."). Professor Strahilevitz's 2005 article is thus somewhat of an outlier in this field of study.

80. *See id.* at 794 (noting that there are "relatively few published opinions that squarely implicate an owner's right to destroy"); *supra* note 47 and accompanying text (discussing why there are a dearth of cases on the right to destroy).

81. *See id.* at 796 (discussing the "bases for restricting the right to destroy").

82. *See id.* at 796 (observing that "the most prominent set of cases" limiting the right "involve efforts by landowners to destroy their homes via will").

83. 524 S.W.2d 210 (Mo. Ct. App. 1975).

84. *See* Abigail J. Sykas, Note, *Waste Not, Want Not: Can the Public Policy Doctrine Prohibit the Destruction of Property by Testamentary Direction?*, 25 VT. L. REV. 911, 927 (2001) (acknowledging that *Eyerman* is the case "most often

Appeals, made the court's rationale quite explicit: "A well-ordered society cannot tolerate the *waste and destruction of resources* when such acts directly affect important interests of other members of that society."[85] It is unclear from the opinion what facts would have resulted in a different outcome, but this sweeping language—though dicta—suggests that the court's underlying reasoning might not have necessarily been limited to testamentary dispositions of real property.[86]

Other courts have since followed *Eyerman* and enjoined executors from carrying out the destructive wishes of testators on the basis of waste.[87] Waste, however, is not the singular concern of courts grappling with an owner's right to destroy her property. For example, cases concerning the destruction of "artistic works" often implicate the right to destroy.[88] The Visual Artists Rights Act of 1990 (VARA)[89] permits courts to enjoin owners of works of art from destroying their property on the basis of artists' rights.[90] In *Martin v. City of Indianapolis*,[91] the destruction had already

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cited as an example of a wasteful desire of a testator").

85. *Eyerman*, 524 S.W.2d at 217 (emphasis added).

86. Indeed, the majority opinion only goes so far to say that a person "is generally restrained from wasteful expenditure or destructive inclinations by the natural desire to enjoy his property or to accumulate it during his lifetime." *Id.* at 215.

87. *See, e.g.*, *In re* Estate of Pace, 400 N.Y.S.2d 488, 492–93 (Sur. Ct. 1977) (refusing to uphold a will provision directing the razing of testator's property and finding such a provision "immoral, a waste, [and] against public policy"); *see also* Adam J. Hirsch, *Bequests for Purposes: A Unified Theory*, 56 WASH. & LEE L. REV. 33, 70–71 (1999) (explaining that "bequests for purposes that a court deems 'capricious'" are frequently invalidated, with provisions "involving either the disuse or destruction of property" offered as an example).

88. SPRANKLING, INTERNATIONAL LAW, *supra* note 39, at 298.

89. 17 U.S.C. § 106A (2012).

90. *See id.* (granting "the author of a work of visual art . . . the right . . . to prevent any intentional distortion, mutilation, or other modification of that work which would be prejudicial to his or her honor or reputation"); Carter v. Helmsley-Spear, Inc., 861 F. Supp. 303, 337 (S.D.N.Y. 1994) (enjoining defendants from "distorting, mutilating, or modifying plaintiffs' art work"), *aff'd in part*, *vacated in part*, *rev'd in part*, 71 F.3d 77 (2d Cir. 1995).

91. 192 F.3d 608 (1999).

occurred and so the artist-plaintiff was awarded "statutory damages."[92]

Other right to destroy cases tend to be more idiosyncratic (perhaps due to the rarity of such cases). One court, bucking tradition,[93] refused to enforce a provision in a will directing that the testator be buried with some of her property.[94] Oddly enough, the court's justification was apparently to deter grave-robbing,[95] reasoning few other courts have found persuasive.[96] Perhaps more understandably, courts will sometimes curtail an owner's right to destroy her animals by will.[97] The basis for this exception to the right to destroy appears to rest on animal cruelty grounds, however, as opposed to the doctrine of waste.[98]

2. Scholarly Disapproval

Much of the negative treatment towards the right to destroy comes from academia.[99] These works, of course, have no legal

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92. *Id.* at 610.

93. *See* Strahilevitz, *supra* note 9, at 784 ("American cadavers are frequently buried wearing wedding rings, other jewelry, and expensive clothing.").

94. *See In re* Meksras' Estate, 63 Pa. D. & C.2d 371, 373 (C.P. 1974) (holding "that decedent's direction to be buried with her jewelry is contrary to public policy, and such provision of the will is void"). Although not strictly the same, burying property is akin to a destructive act. *See* Strahilevitz, *supra* note 9, at 800–03 (discussing "the destruction of chattel property via burial").

95. *See Meksras' Estate*, 63 Pa. D. & C.2d at 373 ("If a practice is developed in our State to foster the burying of valuables with a deceased, our cemeteries like the tombs of the Pharaohs will be ravaged and violated.").

96. *See* Strahilevitz, *supra* note 9, at 800–01 (observing that "*Meksras* is apparently the only published American case on the question of the legality of burying valuable chattels along with a cadaver" and that other cases "dealing with grave robbing suggest that the *Meksras* rule is not adhered to universally").

97. *See* Sykas, *supra* note 84, at 930–34 (discussing cases in which courts refuse to enforce will provisions providing for the destruction of the testator's animals).

98. *See id.* at 934 (noting that in a Vermont case, "public sentiment concerning animal rights and the unique property status of pets influenced the court's" refusal to enforce the testamentary destruction of the animals).

99. *See* Strahilevitz, *supra* note 9, at 785 ("The right to destroy presently

effect, but they are nevertheless influential on courts and lawmakers.[100] Many of these arguments rest on the theories of John Locke, who viewed property rights as stemming from natural law and property as "gifts bestowed by God upon man" to be "held by man in stewardship."[101] Other scholars, however, have argued for limiting an owner's right to destroy her property without invoking Locke at all.[102] This section deals primarily with those arguments.

One of the more prominent scholarly works attacking the right to destroy is Edward McCaffery's *Must We Have the Right to Waste?*[103] As one might infer from this title, Professor McCaffery argues that we should abolish the right to destroy because the right permits owners to waste valuable resources.[104] Rather than echoing any Lockean concerns about stewardship,[105] his criticism rests primarily on economic grounds.[106] His solution is also

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lacks a constituency within the American legal academy."). Of course, it is important to keep in mind that, as with courts, academics have by and large devoted little attention to the right. *See id.* at 794 (discussing the comparative lack of literature on the right to destroy).

100. *See id.* at 784 (noting that at least some scholarly works have given "further momentum" to the "trend of substantially curtailing property owners' destruction rights").

101. ROBERTA KWALL, THE SOUL OF CREATIVITY: FORGING A MORAL RIGHTS LAW FOR THE UNITED STATES 25 (2010); *see also* JOHN LOCKE, SECOND TREATISE OF GOVERNMENT: AN ESSAY CONCERNING THE TRUE ORIGINAL, EXTENT AND END OF CIVIL GOVERNMENT 20 (Richard H. Cox, ed., John Wiley & Sons 2014) ("Nothing was made by God for Man to spoil or destroy."). Indeed, "waste" was "a kind of 'robbery' for Locke." A. JOHN SIMMONS, THE LOCKEAN THEORY OF RIGHTS 321 (1994).

102. *See, e.g.*, Strahilevitz, *supra* note 9, at 784–85 (discussing two critics of the right to destroy: Joseph Sax, who argues against the right on the basis of "cultural significance," and Edward McCaffery, who "argue[s] that there is no place for a right to destroy or waste one's own property in a modern economy").

103. McCaffery, *supra* note 14.

104. *See id.* at 76–77 (contending that there are "good reasons" for the "disdain" of waste and arguing "against the continuance of the *jus abutendi* [or right to destroy]").

105. *See* LOCKE, *supra* note 101, at 29 (espousing that one who properly used property "wasted not the common stock; destroyed no part of the portion of the Goods that belonged to others, *so long as nothing perished uselessly in his hands*" (emphasis added)).

106. *See* McCaffery, *supra* note 14, at 77 (arguing that "waste . . . has

economic in nature: a "consistent consumption tax" and shift towards a "life estate conception of ownership."[107] The complexities of McCaffery's proposal are beyond the purview of this Note.[108] However, one central premise of his argument is quite relevant: "The *jus abutendi* stands as an embarrassment in Anglo-American law."[109]

This attitude towards the right to destroy is not unique to Professor McCaffery.[110] Yet few attack the right directly, preferring—whether intentionally or not—to merely ignore it. For instance, Robert E. Goodin's book on the philosophy of "green" political parties is highly dismissive of the right to destroy.[111] Goodin not only denies the existence of the right, but any need for it as well.[112] Similarly, many persuasive authorities simply fail to mention that a property owner has the right to destroy her property.[113] Perhaps most egregiously, the right has been absent from the pages of *Black's Law Dictionary* since the turn of this century.[114]

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become the more important threat to the collective welfare of a reasonable society").

107. *Id.* at 98–103.

108. Of course, any reader would benefit from taking the time to peruse Professor McCaffery's arguments. *See* Strahilevitz, *supra* note 9, at 784 (referring to Professor McCaffery as one "of the nation's most capable property scholars").

109. McCaffery, *supra* note 14, at 81. This Note takes the opposite position; rather than an embarrassment, the *jus abutendi* can serve a useful purpose in a world where the cloud storage model is the rapidly becoming the norm. *See infra* Parts VI–V (developing this argument further).

110. *See, e.g.*, PETER M. GERHART, PROPERTY LAW AND SOCIAL MORALITY 237–38 (2013) (discussing instances where "law is . . . justified in intervening to prevent destruction").

111. *See* ROBERT E. GOODIN, GREEN POLITICAL THEORY 106 (2013) (claiming that the right to destroy "is mentioned nowhere [on standard lists of property rights] . . . and it appears only incidentally and very much in passing on [other lists]").

112. *See id.* at 106–08 (arguing that the right to destroy cannot be justified).

113. *See, e.g.*, 63C AM. JUR. 2D *Property* § 27 (2015) ("The primary incidents of ownership include the right to possession, the use and enjoyment of the property, the right to change or improve the property, and the right to alienate the property at will.").

114. *See* Strahilevitz, *supra* note 9, at 783 (noting that "as part of an

D. The Right Today

The sum of this history is that the right to destroy is recognized, but limited; tolerated, but disfavored.[115] Professor Sprankling's text on international property law keenly observes the difficulty in discussing it: "Despite its fundamental nature, the right to destroy is rarely made explicit in municipal law. Yet the right is implicitly recognized in virtually all legal systems."[116] American law today reflects this global attitude towards the right to destroy, neither expressly authorizing nor prohibiting property owners (such as Blendtec)[117] from destroying their property in most circumstances.[118]

Whether the limitations discussed in the preceding subpart are sound is not the inquiry at the heart of this Note. More troubling is the fact that some courts fail to include the right to destroy (limited or otherwise) among other property rights, thereby threatening to erode even its implicit recognition.[119] It is worth remembering that the right to destroy was once considered a fundamental property right, for reasons that have not since lost their relevance.[120] Although, as this Note will argue, the growing

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extensive revision, the seventh edition's editors decided to exclude . . . the right to destroy").

115. Professor Sprankling's 2012 property casebook is illustrative here, listing the right to destroy alongside the more familiar rights to use, exclude, and transfer, but with the caveat that its "scope . . . remains unclear." SPRANKLING, UNDERSTANDING PROPERTY, *supra* note 10, at § 1.03(B)(5).

116. SPRANKLING, INTERNATIONAL LAW, *supra* note 39, at 293.

117. *See supra* notes 1–8 and accompanying text (discussing the blender company's exercise of the right to destroy via promotional videos distributed on YouTube).

118. *See* SPRANKLING, INTERNATIONAL LAW, *supra* note 39, at 296 ("The logical implication is that a person holding absolute ownership . . . would have the right to destroy."); *see also supra* Part II.B–C (discussing cases recognizing, and limiting, the right to destroy).

119. *Compare* Evanston Ins. Co. v. Legacy of Life, Inc., 370 S.W.3d 377, 385 (Tex. 2012) ("Some of the key rights that make up the bundle of property rights include the rights to possess, use, transfer, and exclude others."), *with* Council on American-Islamic Rels. Action Network, Inc. v. Gaubatz, 793 F. Supp. 2d 311, 339 (D.D.C. 2011) ("One of the many sticks in the owner's bundle of property rights is the right to destroy the property.").

120. *See supra* Part II.A–B (discussing justifications for the right to destroy

trend of maintaining digital property on the cloud provides a new justification for reaffirming the right to destroy,[121] the underlying spirit of that justification is rooted in, and informed by, this history.

III. Understanding the Cloud

"Nobody understands the Cloud!" bawls a beleaguered Jay Hargrove (portrayed by Jason Segal) in the 2014 movie *Sex Tape*.[122] Although a comedic exaggeration, the words probably capture the sentiment of many when it comes to cloud computing.[123] Therefore, before going further, it would be prudent to explain what, exactly, the cloud is. That explanation proceeds in two steps. The first subpart will examine the nature of digital property itself.[124] The second subpart will define the cloud and chronicle the almost meteoric rise of cloud computing.[125] Finally, with this foundation in mind, the last subpart will provide a brief overview of the cloud computing service pertinent to this Note, cloud storage.[126]

A. The Digital Property Question

The central subject of this Note is digital property stored in the cloud—but what is digital property? Before that question can

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in Roman law and English common law).

121. *See infra* Part V (arguing the need for the right to destroy in the present era of cloud computing).

122. *Sex Tape* (Columbia Pictures 2014). *Sex Tape* follows the arduous journey of a married couple attempting to delete a private video inadvertently uploaded to the cloud. *Id.* Though by no means a masterpiece, the film usefully illustrates the need for a right to destroy in the cloud computing context.

123. *See* WAKEFIELD, CITRIX CLOUD SURVEY GUIDE 1 (Aug. 2012) (reporting the public's misconceptions regarding the cloud); *see also* HOOFNAGLE, *supra* note 25, at 9 (discussing the public's wariness of cloud computing).

124. *See infra* Part III.A (addressing whether the law recognizes digital property and how "digital property" ought to be defined).

125. *See infra* Part III.B (discussing cloud computing generally).

126. *See infra* Part III.C (defining cloud storage and providing examples of cloud storage services).

be resolved, a threshold issue demands exploration: does digital property, in the legal sense, even exist? The answer, frustratingly, is both yes and no.[127]

In *Kremen v. Cohen*,[128] Judge Alex Kozinski of the U.S. Court of Appeals for the Ninth Circuit explained that "[p]roperty is a broad concept that includes 'every intangible benefit and prerogative susceptible of possession or disposition.'"[129] Electronic files—think images, documents, songs, and other data—would appear to meet this definition; although often subject to license agreements,[130] we buy, sell, trade, and use electronic files with ever increasing frequency.[131] Indeed, digital estate planners have recently begun to crop up nationwide.[132] Yet the law often ignores

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127. *See, e.g.*, Joshua A.T. Fairfield, *Bitproperty*, 88 S. CAL. L. REV. 805, 810 (2015) [hereinafter Fairfield, *Bitproperty*] ("[O]nline property interests are either intellectual property interests or strange amalgams of contract, licensing, and pseudoproperty law, such as those that govern users' interests in e-books, MP3s, software, or downloaded movies."); Juliet M. Moringiello, *False Categories in Commercial Law: The (Ir)relevance of (In)tangibility*, 35 FLA. ST. U. L. REV. 119, 142–43 (2007) (discussing views "express[ing] skepticism that digital code within a computer can or should be analogized to a form of property").

128. 337 F.3d 1024 (9th Cir. 2003).

129. *Id.* at 1030 (quoting Downing v. Mun. Ct. of S.F., 198 P.2d 923, 926 (Cal. Dist. Ct. App. 1948)).

130. *See* Fairfield, *Bitproperty*, *supra* note 127, at 839 ("Property rights in digital copies of copyrighted material drift in a limbo of [Digital Rights Management] and end user license agreements."); *infra* Part V.C (discussing the use of license agreements in the digital property marketplace).

131. *See, e.g.*, Tim Hurd, *Law Journals and Emerging Publishing Technology*, 30 T.M. COOLEY L. REV. 231, 232 (2013) (observing that some journals make their issues available for purchase "in an eBook format"); Ashley F. Watkins, Comment, *Digital Properties and Death: What Will Your Heirs Have Access to After You Die?*, 62 BUFFALO L. REV. 193, 194–95 (2014) (recognizing the "wide array of digital assets" owned by individuals today and noting that "the average American believed his or her digital assets to be worth about $55,000"); Duncan Clark, *Playing by the Rules*, GUARDIAN (Sept. 9, 2005, 7:07 AM), http://www.theguardian.com/music/2005/sep/09/netmusic.internet (last visited Mar. 6, 2017) (reporting that "a small but growing number of labels and artists have started selling MP3s directly from their own websites") (on file with the Washington and Lee Law Review).

132. *See, e.g.*, *Digital Assets*, EVERPLANS, https://www.everplans.com/digital-assets (last visited Mar. 6, 2017) (providing instructions on how to plan one's "digital" estate, which includes "social media profiles, downloaded music, photos,

key differences in the types of computer programming code that make up all things digital, regarding the entire category as a subset of intellectual property.[133] Thus one could persuasively argue that the common name for goods made up of "electronic symbols created via a computer,"[134] digital property, is something of a misnomer.

Property law's reluctance to recognize digital property is not necessarily without justification. Some kinds of digital property are not analogous to tangible goods; a block of code that gives a website a particular function, for instance, instinctively seems like something that intellectual property law should properly govern.[135] On the other hand, a PDF version of a novel serves the same function as a paper copy of the novel bound and printed by a publisher.[136] True, there are some differences: a person can make copies of a PDF far more easily than she can make copies of a printed book.[137] But these differences arguably lie in degree, not

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[and] videos") (on file with the Washington and Lee Law Review).

133. *See* Joshua A.T. Fairfield, *Virtual Property*, 85 B.U. L. Rev. 1047, 1049–50 (2005) [hereinafter Fairfield, *Virtual Property*] (noting that some "code" is "protected by the law of intellectual property" and that "we continue to govern virtual property through the law of intellectual property"); Moringiello, *supra* note 127, at 147 (observing the "tendency to place new intangible rights into the category of intellectual property in case law and scholarship"). *But see* Kremen v. Cohen, 337 F.3d 1024, 1030–36 (9th Cir. 2003) (reversing the lower court's holding "that domain names, although a form of property, are intangibles not subject to conversion").

134. Michael S. Richardson, Comment, *The Monopoly on Digital Distribution*, 27 PAC. MCGEORGE GLOBAL BUS. & DEV. L.J. 153, 158 (2014). Richardson observes with disapproval that digital property is "not considered property" because "property is limited to a "material object or movement of power." *Id.*

135. *See* Telebright Corp., Inc. v. Dir., N.J. Div. of Taxation, 424 N.J. Super. 384, 388–89 (2012) (characterizing an employee's "computer code" that is "added" to her employer's "software" as intellectual property).

136. *See* Caitlin J. Akins, Student Article, *Conversion of Digital Property: Protecting Consumers in the Age of Technology*, 23 LOY. CONSUMER L. REV. 215, 244–47 (2010) (discussing the similarities between e-books and physical books and arguing that "intangible digital property, like e-books," should be treated "as chattels").

137. *See, e.g.*, Capitol Records, LLC v. ReDigi, Inc., 934 F. Supp. 2d 640, 656 (S.D.N.Y. 2013) ("Time, space, effort and cost no longer act as barriers to the movement of copies, since digital copies can be transmitted nearly

substance.[138] As scholars have noted, the tangibility–intangibility distinction makes little sense in the modern, digitized world.[139]

Indeed, many have argued that the technology is now in place to treat intangible digital property exactly as tangible property.[140] Some American courts have adopted this view in part, applying ordinary property law to certain digital assets.[141] Legislatures, too, are beginning to realize the need for broader digital property rights; several states have enacted "laws regarding digital assets" in recent years.[142] Courts of other nations have gone even further; according to the European Court of Justice, there is "no difference whether the copy of the computer program was made available by means of a download or

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instantaneously anywhere in the world with minimal effort and negligible cost.").

138. Furthermore, technologies exist that "limit unauthorized uses of copyrighted materials by adding sophisticated security programs to digital products, making it difficult for users to create copies." Akins, *supra* note 136, at 221; *see also* Fairfield, *Bitproperty*, *supra* note 127, at 867 (discussing "emerging technology that attempted to create discrete, rival rights in intangible assets").

139. *See* Moringiello, *supra* note 127, at 120 (arguing that "[c]lassifying property according to its tangibility or intangibility creates false categories unrelated to significant legal distinction").

140. *See, e.g.*, Fairfield, *Bitproperty*, *supra* note 127, at 874 (advocating the use of "block chain technology" to "create an operational system of digital property"); Akins, *supra* note 136, at 250–51 (arguing that the tort of conversion should to apply to digital property); Richardson, *supra* note 134, at 171 (arguing that "the first sale doctrine" should be applied to "digital property transactions that resemble real world sales").

141. *See, e.g.*, Thyroff v. Nationwide Mut. Ins. Co., 864 N.E.2d 1272, 1278 (N.Y. 2007) ("We cannot conceive of any reason in law or logic why [drafting a document in electronic form] should be treated any differently from production by pen on paper . . . . A document stored on a computer hard drive has the same value as a paper document kept in a file cabinet."); Kremen v. Cohen, 337 F.3d 1024, 1036 (9th Cir. 2003) (finding the tort of conversion applicable to domain names).

142. Watkins, *supra* note 131, at 220. For instance, Delaware law provides that a "fiduciary may exercise control over any and all rights in digital assets and digital accounts of an account holder." DEL. CODE ANN. tit. 12, § 5004 (2015). How courts will interpret these statutes, however, remains to be seen. *See* Watkins, *supra* note 131, at 221 n.179 ("No one has attempted to use these statutes in court yet, so it is hard to say for sure the statutes' value.").

on a DVD/CD-ROM."[143] A Dutch court later followed this same reasoning to permit the sale of "secondhand" e-books.[144]

Now, to return to the question that began this subpart: what is digital property? For the purposes of this Note, it is digital assets.[145] These assets include "images, photos, videos, and text files."[146] Although such assets were once predominantly stored locally, on hard drives and USB sticks, for instance, today they are often stored elsewhere, in a frequently misunderstood place known as the cloud.[147]

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143. Richardson, *supra* note 134, at 168.

144. *See* David Meyer, *Secondhand E-bookstore Tom Kabinet Can Stay Online, Dutch Court Rules*, GIGAOM (July 22, 2014, 1:19 AM), http://gigaom.com/2014/07/22/secondhand-ebook-store-tom-kabinet-can-stay-online-dutch-court-rules (last visited Mar. 6, 2017) ("A Dutch secondhand e-bookstore has successfully defended a court case brought about by the country's publishers' association, which argues that e-books cannot be legally resold.") (on file with the Washington and Lee Law Review).

145. Although the legal status of digital property can only be called unresolved, digital assets have become ubiquitous in our society. *See* JOHN PALFREY & URS GASSER, BORN DIGITAL: UNDERSTANDING THE FIRST GENERATION OF DIGITAL NATIVES 2 (2009) (noting that many "aspects" of young peoples' "lives . . . are mediated by digital technologies").

146. John Romano, *A Working Definition of Digital Assets*, THE DIGITAL BEYOND (Sept. 1, 2011), http://www.thedigitalbeyond.com/2011/09/a-working-definition-of-digital-assets/comment-page-1 (last visited Mar. 6, 2017) (on file with the Washington and Lee Law Review). For a more encompassing definition that would necessarily include the kinds of digital assets pertinent to this Note, see FAIRFIELD, OWNED, *supra* note 22, manuscript at 14

> Digital property refers to your ownership rights . . . in digital objects, like the game, movie, book, or music that you have purchased and downloaded. Digital property can be as new and strange as a Bitcoin or a magical sword in a massively multiplayer online video game, or as old as the bits and bytes of data that represent the numbers in your bank account or stock portfolio.

147. *See* Lixian Loong Hantover, *The Cloud and the Deep Sea: How Cloud Storage Raises the Stakes for Undersea Cable Security and Liability*, 19 OCEAN & COASTAL L.J. 1, 1 (2013) (noting that we have "give[n] up our hard drives for storage online in the cloud").

B. The Rise of Cloud Computing

What is the cloud? Even among industry experts, the answer to that question is up in the air.[148] The National Institute of Standards and Technology (NIST) provides a very specific definition, replete with industry jargon:

> Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction. This cloud model is composed of five essential characteristics [on-demand self-service, broad network access, resource pooling, rapid elasticity, and measured service], three service models [software-as-a-service, platform-as-a-service, and infrastructure-as-a-service], and four deployment models [private cloud, community cloud, public cloud, and hybrid cloud].[149]

Others, by contrast, view the cloud very generally as "a metaphor for the Internet."[150] There are myriad definitions between these two extremes,[151] but one strikes a good balance: cloud computing is the "on-demand delivery" of "resources and applications over the Internet."[152] This definition, though less technical than the NIST's, is perhaps more palatable to the IT novice and will suffice for the purposes of this Note.

These competing definitions are relevant because how we conceptualize the cloud determines, among other things, when exactly cloud computing got its start.[153] It would be easy to assume that the cloud is new technology, given that the term was

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148. *See* Sharon K. Sandeen, *Lost in the Cloud: Information Flows and the Implications of Cloud Computing for Trade Secret Protection*, 19 VA. J.L. & TECH. 1, 5–6 (2014) (discussing various proposed definitions of cloud computing).

149. MELL & GRANCE, *supra* note 19, at 2.

150. Sandeen, *supra* note 148, at 6.

151. *See id.* ("Many people and organizations have defined cloud computing slightly differently.").

152. RAY RAFAELS, CLOUD COMPUTING: FROM BEGINNING TO END 12 (2015).

153. *See* Sandeen, *supra* note 148, at 18 (observing that "cloud computing is either a revolutionary development or the hyped-up, repackaging of pre-existing business models").

first coined in the late 1990s[154] and entered the common parlance only recently.[155] The foundations of cloud computing, however, were laid out long ago.[156] These early, mostly theoretical notions of the cloud resemble what some today have equated cloud computing with: the internet.[157] On the other hand, the meaning of cloud computing "has evolved over time, and it is still evolving."[158]

It is thus unclear when, precisely, cloud computing began to really take hold; such dating might not even be possible.[159] What is clear, however, is that the cloud *has* taken hold, with no less firm a grasp than other ubiquitous technologies, such as personal computers themselves.[160] The vast majority of businesses use cloud computing in one way or another,[161] and the same is true

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154. *See* Stuart L. Pardau & Blake Edwards, *The Ethical Implications of Cloud Computing for Lawyers*, 31 J. MARSHALL J. COMPUTER & INFO. L. 69, 72 (2014) (noting that "Ramnath K. Chellappa of Emory University" coined "the term 'cloud computing' in 1997").

155. *See Google Trends*, GOOGLE, http://www.google.com/trends/explore#q=%22cloud%20computing%22 (last visited Mar. 6, 2017) (reporting no Google searches for the term "cloud computing" until 2007) (on file with the Washington and Lee Law Review).

156. Pardau & Edwards, *supra* note 154, at 72 (observing that "the underlying concept" of cloud computing "dates back to the Fifties").

157. *See id.* (noting that in 1969 a computer scientist "introduced an idea for 'an intergalactic computer network' in which programs and data could be accessed from anywhere"). This makes sense, as cloud computing was perhaps a "natural progression for the computer, Internet, and telecommunications industries." Sandeen, *supra* note 148, at 24–25.

158. David Linthicum, *Pop Quiz: Who Invented Cloud Computing?*, INFOWORLD (May 30, 2014), http://www.infoworld.com/article/2608420/cloud-computing/pop-quiz--who-invented-cloud-computing-.html (last visited Mar. 6, 2017) (on file with the Washington and Lee Law Review).

159. *See id.* ("The concept of 'the cloud' is and was far different from its meaning in the 1960s, 1970s, 1980s, and 1990s . . . .").

160. *See, e.g.*, F5, THE NEW LANGUAGE OF CLOUD COMPUTING 1 (2015), https://f5.com/Portals/1/Images/infographics/Inforgraphic-The-New-Language-Of-Cloud-Computing/Info%20Paper_New%20Language%20of%20Cloud%20APAC%20(12July2015)%20FINAL.pdf ("Today cloud is no longer the buzzword of five years ago, and is now part of the fabric of the modern enterprise.").

161. *See* RIGHTSCALE, 2015 STATE OF THE CLOUD REPORT 5–6 (2015), http://assets.rightscale.com/uploads/pdfs/RightScale-2015-State-of-the-Cloud-Report.pdf (finding that, of 930 professionals surveyed, only ten percent do not

for individuals, even if they are unaware of the precise meaning of the cloud.[162] Moreover, consumer usage of the cloud is predicted to grow even higher in the years to come.[163] Although cloud computing takes many forms,[164] one cloud-based service in particular might account for this surge in popularity: the subject of this Note and the following subpart, cloud storage.[165]

C. An Overview of Cloud Storage

Cloud storage, also known as "storage-as-a-service,"[166] is most likely what comes to mind when consumers think of the cloud.[167] It is, in short, a "model of data storage where digital

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and do not plan to use cloud computing services).

162. *See* Tony Danova, *Most People Are Still Confused About Cloud Storage, and No One Service Is Winning the Race to Educate and Acquire Users*, BUS. INSIDER (Aug. 22, 2014, 4:50 PM), http://www.businessinsider.com/people-use-the-cloud-and-dont-even-realize-it-2014-7 (last visited Mar. 6, 2017) (reporting that "90% of global internet users are already on the cloud, and that number will remain steady as internet usage spreads globally," but acknowledging that, "despite so much usage, consumer awareness of cloud services remains low") (on file with the Washington and Lee Law Review).

163. *See* Jagdish Rebello, *Consumers Aggressively Migrate Data to Cloud Storage in First Half of 2012*, IHS TECH. (Oct. 15, 2012), http://technology.ihs.com/413377/consumers-aggressively-migrate-data-to-cloud storage-in-first-half-of-2012 (last visited Mar. 6, 2017) (predicting "1.3 billion" subscriptions to cloud services by 2017) (on file with the Washington and Lee Law Review).

164. *See* Christina Chow, Note, *Capitol Records, Inc.: Holding No Public Performance Violations for Deleting Duplicative Files Off Cloud Servers and the Positive Future Implications Regarding Consumer Efficiency*, 20 J. INTELL. PROP. L. 121, 124 (2012) ("Currently, there are a number of different types of cloud computing.").

165. *See id.*

> One of the more recently developed cloud servers is one that acts in the same manner as a personal computer's internal memory. Cloud servers of this type, such as Dropbox, allow users to sign up for an account and receive a certain amount of storage space where they can save, store, and access files as they would on their computer's hard drive or on an external memory stick.

166. RALPH STAIR & GEORGE REYNOLDS, PRINCIPLES OF INFORMATION SYSTEMS 121 (2015).

167. *See* David Colarusso, Note, *Heads in the Cloud, a Coming Storm: The Interplay of Cloud Computing, Encryption, and the Fifth Amendment's*

data are remotely accessed, stored, maintained, and backed up."[168] Cloud storage can itself be divided into several subcategories, but predominantly refers to the "public cloud."[169] Other forms include private or personal cloud storage, where users essentially maintain their own cloud (or pay a third party to maintain a cloud exclusively for their use),[170] and hybrid cloud storage, a "composition" of both public and private cloud storage.[171] The security of a private cloud alleviates some of this Note's concerns,[172] but requires a heavier investment of resources and more "hands on management" compared to public cloud services.[173] As such, private cloud storage is not a practical option for individuals and out of reach for many businesses.[174]

The public cloud storage model essentially consists of users (not necessarily paying subscribers) storing their digital files on servers owned and operated by a third party.[175] Access is

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Protection Against Self-Incrimination, 17 B.U. J. SCI. & TECH. L. 69, 81 (2011) (observing the "general recognition that cloud computing is the practice of storing and processing data").

168. RAFAELS, *supra* note 152, at 32.

169. *See* LUCIO GRANDINETTI ET AL., PERVASIVE CLOUD COMPUTING TECHNOLOGIES: FUTURE OUTLOOKS AND INTERDISCIPLINARY PERSPECTIVES 62 (2013) (describing the public cloud as "the main cloud computing model").

170. *See id.* at 61 (noting that a "private cloud . . . is operated solely for an organization," but that it "may exist on premise or off premise").

171. *Id.* at 62.

172. *See id.* at 61–62 (2013) (explaining that the "private cloud" lacks some "risks and threats such as security, governance, and reliability concerns," and observing that "a customer of a private cloud has a high degree of control and oversight of the physical and logical security aspects of private cloud infrastructure").

173. *Id.* at 61.

174. *See* S. SRINIVASAN, CLOUD COMPUTING BASICS 17 ("Private clouds are predominantly used by large businesses that need to supplement their data centers in a reliable way."). Therefore, this Note focuses exclusively on the "public cloud" and use that term interchangeably with cloud storage in general.

175. *See* Aaron J. Gold, Note, *Obscured by Clouds: The Fourth Amendment and Searching Cloud Storage Accounts Through Locally Installed Software*, 56 WM. & MARY L. REV. 2321, 2323 (2015) ("Companies providing public cloud storage maintain user data on clusters of networked servers at off-site locations.").

typically granted through a website or mobile application.[176] This data, now on the cloud, can then be accessed by anyone with the user's credentials.[177] Moreover, the files are typically "synced," which means they exist simultaneously on the cloud and the user's local device, such as a computer's hard drive or the internal memory of a smartphone, via frequent updating.[178]

Although the cloud is spoken of in the singular, there is a veritable multitude of public cloud storage services.[179] Many are geared towards individuals and small businesses, offering free storage up to a certain allotment, then charging a fee on a sliding scale.[180] Some of these services may even be automatic; that is, the user herself may not necessarily be aware that her files are being stored on the cloud.[181] Other cloud storage providers more

176. *See id.* at 2323–24 (observing that cloud storage users can "access their data from any Internet-capable device").

177. *See id.* at 2334 n.73 ("For example, members of the William & Mary Law Review share a cloud storage account provided by Dropbox.").

178. *See* Jeffrey Allen, *ROAD WARRIOR: Data Migration and Synchronization*, 30 GPSOLO 4, 4 (2013) (noting that "[cloud] data can be synchronized easily across devices").

179. *See* Stacy Fisher, *Best Cloud Storage Services for Backup*, BALANCE, http://freebies.about.com/od/computerfreebies/tp/free-cloud-storage.htm (last updated Jan. 3, 2017) (last visited Mar. 6, 2017) (weighing the pros and cons of several cloud storage options) (on file with the Washington and Lee Law Review).

180. *See, e.g.*, *Buy, Change, or Cancel Storage Plans*, GOOGLE, http://support.google.com/drive/answer/2375123?hl=en (last visited Mar. 6, 2017) (offering plans of fifteen gigabytes of cloud storage for free, 100 gigabytes for $1.99 a month, and thirty terabytes—or 30,000 gigabytes—for $299.99 a month, among others) (on file with the Washington and Lee Law Review).

181. *See* Riley v. California, 134 S. Ct. 2473, 2491 (2014) (observing that "[c]ell phone users often may not know whether particular information is stored on the device or in the cloud"); FAIRFIELD, OWNED, *supra* note 22, manuscript at 173 (noting that certain devices "enable cloud storage not only for data that the user wishes to store elsewhere, but also for every temporary or unsaved file on several widely used applications and even for local files residing on a user's encrypted hard drive"); David Gilbert, *Apple 'Actively Investigating' if iCloud Is to Blame for Jennifer Lawrence Nude Photo Leak*, INT'L BUS. TIMES (Sept. 2, 2014), http://www.ibtimes.co.uk/apple-actively-investigating-if-icloud-blame-jennifer-lawrence-nude-photo-leak-1463551 (last visited Mar. 6, 2017) ("Apple's iCloud automatically stores iPhone users photos and video in the cloud as a back-up measure, with many people unaware that this is happening.") (on file with the Washington and Lee Law Review).

directly target commercial enterprises.[182] These services tend to be costlier, but emphasize features such as privacy and security.[183]

It is easy to appreciate why consumers have so rapidly adopted the cloud for their digital storage needs.[184] For businesses, the benefits of cloud storage are both practical and economical.[185] For individuals, cloud storage offers unprecedented convenience.[186] This latter point is especially important given that modern personal technology tends to be spread around multiple devices (the combination of a laptop, work computer, tablet, and smartphone, for instance) rather than a single machine tethered to one particular location.[187] It is thus no

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182. *See* Shobhit Seth, *8 Best Cloud Storage Solutions for Small Business*, INVESTOPEDIA (Sept. 7, 2015), http://www.investopedia.com/articles/personal-finance/090715/8-best-cloud-storage-solutions-small-business.asp (last visited Mar. 6, 2017) (discussing several business-oriented cloud storage providers) (on file with the Washington and Lee Law Review).

183. *See, e.g.*, *id.* (discussing the cloud storage service "SpiderOak," which touts among its features "privacy" and "full control to the clients").

184. *See* Erin Griffith, *Who's Winning the Consumer Cloud Storage Wars?*, FORTUNE (Nov. 6, 2014, 11:44 AM), http://fortune.com/2014/11/06/dropbox-google-drive-microsoft-onedrive (last visited Mar. 6, 2017) ("Dropbox claims 300 million users as of May. Google Drive has 240 million users as of September. Microsoft says OneDrive has 'more than' 250 million users.") (on file with the Washington and Lee Law Review).

185. *See* IS TECHNOLOGY, CLOUD STORAGE TRENDS FOR 2015 2 (2015), http://www.iisl.com/userfiles/files/10294_cloud_trends_2015_WP.pdf (reporting that "80% of companies that adopt cloud technologies see improvements within six months of adoption").

186. *See* Mark Wilson, Comment, *Castle in the Cloud: Modernizing Constitutional Protections for Cloud-Stored Data on Mobile Devices*, 43 GOLDEN GATE U. L. REV. 261, 268 (2013) ("Users choose to store their information in the Cloud, and not on their computers, for a variety of reasons. Information may be stored in the Cloud as a backup . . . [and] users of all types find it convenient to access cloud-stored information wherever they have an Internet connection.").

187. *See* STUART TAYLOR ET AL., A "MARRIAGE MADE IN HEAVEN": MOBILE DEVICES MEET THE MOBILE CLOUD 2 (2011), http://www.cisco.com/web/about/ac79/docs/sp/Mobile_Cloud_Device.pdf ("The collision of [the trends of mobile devices and cloud computing]—the *mobile cloud*—stands to . . . radically alter the way people live, learn, work, and play."); Wilson, *supra* note 186, at 268 (observing the correlation between the use of smartphones and cloud storage services).

exaggeration to say that cloud storage, for most, is less a matter of utility than necessity.[188]

IV. Property Rights Lost in the Cloud

We now (hopefully) understand what the cloud is and why it has become so prevalent.[189] But cloud computing is not without its drawbacks. As alluded to in this Note's introduction, the rapid adoption of cloud storage services threatens the property rights of the owners of cloud-maintained data in two closely related senses.[190] First, it prevents such owners from fully controlling their property.[191] Second, it robs such owners of the certainty that their property rights—whether the right to use, transfer, exclude, destroy, or some other—are being effectively exercised.[192] We might alternatively label this as a "peace of mind" problem. The following subparts will discuss these problems more comprehensively in turn.

A. The Control Problem

Anglo-American law conceptualizes property as a "bundle of rights,"[193] but what are these rights meant to actually confer upon their holders? The answer, essentially, is control.[194] This

188. *See* STUART TAYLOR ET AL., *supra* note 187, at 6, 11 (noting that "smartphone usage and the adoption of mobile cloud services are intimately linked, forming a virtuous circle").

189. *See supra* Part III.B–C (discussing the cloud and cloud storage).

190. *See supra* notes 22–25 and accompanying text (arguing that the convenience of the cloud comes at the cost of property owners' control and peace of mind).

191. *See infra* Part IV.A (discussing the "control problem" of cloud storage).

192. *See infra* Part IV.B (discussing the "certainty problem" of cloud storage).

193. 63C AM. JUR. 2D *Property* § 1 (2008); SPRANKLING, UNDERSTANDING PROPERTY, *supra* note 10, at § 1.03(B).

194. *See, e.g.*, Laura B. Bartell, *The Lease of Money in Bankruptcy: Time for Consistency?*, 16 BANK. DEV. J. 267, 318 (2000) ("Although one can have control over property without ownership . . . ownership of property generally carries with it the unrestricted right to control."); FAIRFIELD, OWNED, *supra* note 22,

becomes clear when we consider the rights—the "sticks" in the "bundle"—themselves.[195] The right to possess and use is most obvious; to "use" a thing, in the most basic sense, is to "control" it.[196] Moreover, when dealing with intangible property such as data (whether stored on the cloud or not), control is the only means of possession.[197]

Other property rights also endow their holders with control. The right to exclude, and the corollary right to include,[198] allow the right-holder to control who can make use of the property and to what extent.[199] The right to destroy confers the owner with the

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manuscript at 13 ("We buy [property] so we can control it—protect it from others, use it ourselves, and, if we permit them to, determine how others use it."); Kathy T. Graham, *The Uniform Marital Property Act: A Solution for Common Law Property Systems?*, 48 S.D. L. REV. 455, 465 (2003) (observing that "management and control over property includes many if not most of the benefits of ownership").

195. Recall the most prominent rights in the bundle: "(1) the right to exclude; (2) the right to transfer; (3) the right to possess and use; and (4) the right to destroy." SPRANKLING, UNDERSTANDING PROPERTY, *supra* note 10, at § 1.03(B). Depending on who you ask, however, the right to destroy may or may not be included in this list. *See supra* Part II.D (observing that the right to destroy is not consistently recognized).

196. *Compare Control*, MERRIAM-WEBSTER, http://www.merriam-webster.com/dictionary/control (last visited Mar. 6, 2017) (defining "control" as "to direct the actions or function of (something)") (on file with the Washington and Lee Law Review), *with Use*, MERRIAM-WEBSTER, http://www.merriam-webster.com/dictionary/use (last visited Mar. 6, 2017) (defining "use" as "the act or practice of employing something") (on file with the Washington and Lee Law Review).

197. *See* LINDA J. RUSCH & STEPHEN L. SEPINUCK, PROBLEMS AND MATERIALS ON SECURED TRANSACTIONS 258 (3d ed. 2014) ("Control is a conceptual analog to possession for certain types of intangible collateral, property for which physical possession is impossible.").

198. *See* Daniel B. Kelly, *The Right to Include*, 63 EMORY L.J. 857, 861 (2014) (arguing that the right to exclude implies the right to include and discussing "a number of institutional arrangements by which owners may include others").

199. *See* FAIRFIELD, OWNED, *supra* note 22, manuscript at 13 ("The ability to control what goes on in and on and through our property is a function of our ability to exclude others."); *see also* Kelly, *supra* note 198, at 869 (utilizing "the analogy of the gatekeeper to suggest that owners can include as well as exclude"). A gatekeeper, of course, is "a person who *controls* access." *Gatekeeper*, MERRIAM-WEBSTER, http://www.merriam-webster.com/dictionary/gatekeeper (last visited Mar. 6, 2017) (emphasis added) (on file with the Washington and

ultimate control over the property: the property's very existence. This is perhaps why the right is regarded as the most "extreme" stick in the bundle.[200] Finally, the right to transfer grants the right-holder the power to control who shall possess any one or all of the other rights.[201]

Conversely, a significant consequence of storing digital property on the cloud is a lack of control, which manifests most clearly when the user attempts to delete such property.[202] To be sure, cloud storage is a predominantly user-managed system.[203] The subscriber to the cloud storage service decides which of her digital assets are to be stored on the cloud and who can access those assets—ostensibly, at least.[204] In reality, the user is merely sending commands to the cloud storage provider via an application.[205] The *effects* of those commands occur "under the hood," through code designed and managed by the cloud storage service.[206]

Lee Law Review).

200. *See* Strahilevitz, *supra* note 9, at 788, 794–95 (discussing the view that "the owner's right to destroy his property [is] the most extreme use of property imaginable").

201. *See* Kelly, *supra* note 198, at 869 (noting that the right to transfer is "an owner's powers to transfer particular sticks in [the] bundle" of rights (citations omitted)). We might thus consider the right to transfer a kind of meta-right within this framework.

202. *See, e.g.*, Timothy D. Martin*, Hey! You! Get Off of My Cloud: Defining and Protecting the Metes and Bounds of Privacy, Security, and Property in Cloud Computing*, 92 J. PAT. & TRADEMARK OFF. SOC'Y 283, 289 (2010) (observing that cloud users "give up control over [their] data because much of it is stored in some unknown location in the cloud"); Robert Sheldon, *Deleting Files in the Cloud*, SIMPLE TALK (Sept. 23, 2014), http://www.simple-talk.com/cloud/cloud-data/deleting-files-in-the-cloud (last visited Mar. 6, 2017) (explaining that cloud storage users "can't control what service providers do with their data, especially the deleted stuff") (on file with the Washington and Lee Law Review).

203. *See* Gold, *supra* note 175, at 2324–29 (discussing the user's role in storing digital files through cloud storage).

204. *See id.* at 2323, 2334 (noting that cloud storage users "can upload data to cloud servers in various ways" and that anyone with the user's credentials can access cloud-maintained data).

205. *See id.* at 2347 (observing that a cloud provider may not necessarily adhere to a cloud user's request).

206. *See* RAFAELS, *supra* note 152, at 32–38 (discussing the mechanics of cloud storage). In other words, "just because [files stored on the cloud] disappear

Furthermore, the owner of the cloud-maintained data lacks the power to prevent the cloud storage provider from deleting that data.[207] Of course, the cloud storage provider is not likely to do this willfully.[208] But the cloud is maintained by humans, and humans are prone to error.[209] This, combined with the cloud storage providers' lack of accountability,[210] reinforces the central proposition of this Note: it is the owner of the cloud, and not the owner of the cloud-maintained digital property, who has all the control, power, and, indeed, the very incidents of ownership that property law is meant to secure.[211]

These are not mere hypothetical concerns. Some time ago, the cloud storage provider Dropbox mishandled access permissions to files stored on its servers, allowing anyone, theoretically, to download the private files of another.[212] In

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from view doesn't mean they're gone forever." Sheldon, *supra* note 202.

207. *See, e.g.*, Ovi Demetrian Jr., *Google Drive Storage Loses Google Docs Data*, GOOGLE DRIVE SUCKS, http://googledrivesucks.com (last visited Mar. 6, 2017) (discussing one user's experience of losing "years of work and personal memories that [he] saved as Google Docs files because of a poor user interface") (on file with the Washington and Lee Law Review).

208. Still, it is fairly easy to imagine some scenarios in which a cloud storage provider may purposefully delete its users' data. For instance, suppose a user stores a pirated music or movie file on her Dropbox account. Dropbox then may not only desire to delete the user's data, but may be required to do so by a court of law. *See, e.g.*, Sega Enters. v. MAPHIA, 948 F. Supp. 923, 927 (N.D. Cal. 1996) (discussing a court order permitting the plaintiff to enter defendant's premises and delete pirated software). Our sympathies may not lie with the digital pirate in that particular case, but the fact that a third party has that kind of power over a person's property (albeit stolen property) is troubling at the very least.

209. *See* Timothy J. Calloway, *Cloud Computing, Clickwrap Agreements, and Limitation on Liability Clauses: A Perfect Storm?*, 11 DUKE L. & TECH. REV. 163, 170 (2012) ("Cloud providers go to great lengths to provide reliable services to their customers. . . . Yet despite these precautions, server crashes, hard drive failures, and other disasters do occur, and customers suffer the consequences.").

210. *See id.* at 168–69 (noting that many cloud storage agreements contain clauses limiting liability).

211. *See* Pound, *supra* note 73, at 997 (observing that "property involves six rights," including "possessing" and "using"); *supra* notes 24–33 and accompanying text (discussing the distinctions between owning digital property maintained on the cloud, digital property generally, and tangible property).

212. *See* Nate Lord, *Communicating the Data Security Risks of File Sharing*

another instance, a "security flaw" resulted in numerous files stored on Dropbox being exposed to the internet at large.[213] These may have only been "temporary situation[s]," but, as one industry expert put it, they "demonstrate[] the loss of user control when using [cloud storage] services."[214]

Perhaps more famously, in 2014 a computer hacker stole a number of celebrities' digital photos stored on iCloud,[215] one of the more popular cloud storage services.[216] What surprised one of these victims, however, was that the stolen photos were supposed to have been deleted.[217] Perhaps someone should have warned her: when it comes to cloud storage, there is no guarantee that the user's commands will be heeded.[218] Some cloud storage providers, in fact, are entirely upfront about this (to the extent a

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& Cloud Storage, DIGITAL GUARDIAN (Sept. 28, 2015), http://digitalguardian.com/blog/communicating-data-security-risks-file-sharing-cloud-storage (last visited Mar. 6, 2017) (discussing "a brief period of time during which anyone could access any file stored by Dropbox just by knowing the correct URL") (on file with the Washington and Lee Law Review).

213. Sharif Sakr, *Dropbox Cuts Access to Shared Documents that Were Accidentally Exposed to the Web*, ENGADGET (May 6, 2014), http://www.engadget.com/2014/05/06/dropbox-forced-to-cut-links-to-shared-documents (last visited Mar. 6, 2017) (on file with the Washington and Lee Law Review).

214. *Id.*

215. *See* Alan Duke, *5 Things to Know About the Celebrity Nude Photo Hacking Scandal*, CNN, http://www.cnn.com/2014/09/02/showbiz/hacked-nude-photos-five-things (last updated Oct. 12, 2014) (last visited Mar. 6, 2017) ("There's a list of 100 celebrity women—and one man—whose photos were supposedly downloaded and stolen by a hacker.") (on file with the Washington and Lee Law Review).

216. *See* Jon Fingas, *Strategy Analytics: iCloud, Dropbox and Amazon Top Cloud Media in the US*, ENGADGET (Mar. 21, 2013), http://www.engadget.com/2013/03/21/strategy-analytics-cloud-media-market-share (last visited Mar. 6, 2017) (reporting that iCloud is the most widely used cloud storage service among consumers) (on file with the Washington and Lee Law Review).

217. *See* Duke, *supra* note 215 (noting that one actress tweeted that her hacked photos "were deleted long ago").

218. *See* Gold, *supra* note 175, at 2347 ("Even after a user deletes his data or closes his account, many cloud storage providers will preserve data on their servers for a period of time.").

terms of service clause can be considered upfront).[219] That, of course, does not eliminate the problem.[220]

B. The Peace of Mind Problem

When the cloud storage user comes to learn that she lacks of control over her cloud-maintained digital property,[221] what naturally follows is a loss of peace of mind.[222] This is a problem because peace of mind, certainty, security—however one wishes to phrase it—is a fundamental aspect of property law.[223] The right to destroy arguably exemplifies this background principle of property rights, as it is the only right that, if effectively exercised, is necessarily permanent.[224] The process of deleting data from the cloud, however, is anything but certain.[225]

Put another way, this is an issue of trust.[226] As computer expert Ray Rafaels observes, the cloud user "relinquishes direct

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219. *See id.* at 2339 (discussing cloud storage "agreements in which the provider retains the expressed right to access and, in some cases, use the information provided").

220. *See infra* Part IV.D (discussing why a solution is needed even if cloud storage is utilized on a voluntary basis).

221. *See supra* Part IV.A (noting the extent to which a cloud storage provider maintains control over the digital property its users store in the cloud).

222. *See* HOOFNAGLE, *supra* note 25, at 9 (reporting that many consumers are "very concerned" about cloud storage providers selling or using their data and keeping their data after they attempt to delete it).

223. *See* William Fisher, *Theories of Intellectual Property*, *in* NEW ESSAYS IN THE LEGAL AND POLITICAL THEORY OF PROPERTY 189–90 (Stephen R. Munzer ed., 2001) (discussing the interests "advanced by a system of property rights," including peace of mind and security); Joseph William Singer, *Property as the Law of Democracy*, 63 DUKE L.J. 1287, 1316 (2014) (describing "property" as a "stable basis of expectation" and arguing "that a property law system should give us . . . peace of mind").

224. *See* Strahilevitz, *supra* note 9, at 794 ("[B]y destroying a vase, [one] permanently exclude[s] third parties from using it. . . . [One] do[es] not merely use it—[one] use[s] it up.").

225. *See* Gold, *supra* note 175, at 2347 (noting that cloud storage providers may retain users' data even after the user apparently deletes them).

226. *See* RAFAELS, *supra* note 152, at 58 (discussing issues of trust in "the cloud computing paradigm"); Gervais & Hyndman, *supra* note 28, at 79 (observing that "it is up to the user . . . to trust that the [cloud storage] provider

control over many aspects of security and, in doing so, confers a level of trust onto the cloud provider."[227] One way to remedy the problem may be by contract,[228] but that is no effective cure because cloud storage contracts are predominantly non-negotiable.[229] Moreover, such contracts tend to be ambiguous as to what rights the cloud storage provider may actually exercise with regard to its users' data.[230]

A brief glance at a few cloud storage services will prove the point. We have already discussed Dropbox,[231] but it bears repeating in the context of this problem that the language used by its privacy policy is elusive at best.[232] JustCloud, another cloud storage vender, provides in its terms and conditions that it "may retain" data users store on its servers "for *a period* after [the] trial or license has been terminated, expired, or otherwise lapsed."[233] Google, a giant in this arena, assures users of Google Drive (a cloud storage service) that they retain all rights to their digital property,[234] but the company's support pages state the

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will delete her information").

227. RAFAELS, *supra* note 152, at 58.

228. *See id.* at 58–59 (suggesting that cloud computing contracts "state clearly that the [user] retains ownership over all its data" and that "the cloud provider" may not "use the data for its own purposes").

229. *See* Calloway, *supra* note 209, at 172 (noting that cloud users lack "sufficient bargaining power" and "are often left with a boilerplate clickwrap agreement"). Calloway observes that although in the past "judges either held [such agreements] to be unenforceable contracts of adhesion or found particular terms to be unconscionable," there has been "a jurisprudential shift towards a willingness to enforce these contracts." *Id.* at 168–69.

230. *See infra* notes 231–235 and accompanying text (discussing the vague language of several cloud storage providers' respective terms of service).

231. *Supra* notes 29, 31, 219 and accompanying text.

232. *Compare Delete Files in Dropbox*, *supra* note 29 (instructing users on how to "permanently" delete their files), *with Dropbox Privacy Policy*, *supra* note 31 (providing that there "might be some latency" before Dropbox deletes the files and that Dropbox "may retain" the files under certain circumstances).

233. *JustCloud Terms and Conditions*, JUSTCLOUD, http://www.justcloud.com/terms (emphasis added) (last updated Sept. 19, 2016) (last visited Mar. 6, 2017) (on file with the Washington and Lee Law Review).

234. *See Google Terms of Service*, GOOGLE, http://www.google.com/policies/terms/ (last updated Apr. 14, 2014) (last visited Mar. 6, 2017) (informing users of Google Drive that "what belongs to you stays yours") (on file with the

"owner of the file" may contact Google "to help recover a deleted file or folder for a limited time."[235] Google's policy may be born of good intentions, but it nevertheless begs several questions: How long is a limited time? Where is the data stored between deletion and recovery? Who can access the supposedly deleted file? More important, given the vague language used by Google and other cloud storage providers, can the cloud user be said to have any certainty with regard to the usage of her cloud-maintained digital property?

Even if the cloud provider states unambiguously that files will be deleted upon command, the issue of trust is not cured because it is the cloud provider, not the cloud user, who is in control of the digital property.[236] A recent case involving the video messaging application Snapchat exemplifies this particular problem.[237] Briefly, Snapchat claimed that any messages sent using its application would be deleted within a period of time designated by the sender.[238] Indeed, Snapchat's own FAQ stated unequivocally: "[Messages] disappear after the timer runs out."[239] Yet, according to the Federal Trade Commission (FTC), this claim

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Washington and Lee Law Review).

235. *Find or Recover a File*, GOOGLE, https://support.google.com/drive/answer/2405957?hl=en (last visited Mar. 6, 2017) (on file with the Washington and Lee Law Review).

236. *See* Sheldon, *supra* note 202 ("Users are embracing the cloud in droves for good reason . . . . The flip side to this is that the cloud also translates to a loss of control.").

237. *See* Complaint, *In re* Snapchat, Inc., F.T.C. Docket No. C-4501 (May 8, 2014) 2014 WL 1993567 (alleging that Snapchat "violated the provisions of the Federal Trade Commission Act"). Although Snapchat is not a cloud storage service, it does retain unviewed messages on its own servers for "30 days." SNAPCHAT, SNAPCHAT LAW ENFORCEMENT GUIDE 6 (2015), https://storage.googleapis.com/snap-inc/privacy/lawenforcement.pdf. In that sense Snapchat resembles a cloud provider. *See* Sandeen, *supra* note 148, at 27 ("In one form or another, cloud computing services store bits of information on behalf of their customers.").

238. *See* Complaint, *In re* Snapchat, Inc., F.T.C. Docket No. C-4501 at 2 ("Snapchat marketed its application as a service for sending 'disappearing' photo and video messages, declaring that the message sender 'control[s] how long your friends can view your message.'").

239. *Id.* at 3.

was misleading.[240] There were in fact "several methods . . . by which a recipient [could] use tools outside of the application to save both photo and video messages, allowing the recipient to access and view the photos or videos indefinitely."[241] As a result, the FTC ordered Snapchat to rectify the way it represented itself to the public.[242]

Similarly, cloud storage users have no real way of knowing whether their property rights are being effectively exercised.[243] A user can command her cloud storage provider to do many things, including delete the digital property she has entrusted to it.[244] She cannot, however, verify that her commands have taken effect; she must simply have faith that her storage service has provided an accurate picture of the server (or servers) where the data are actually being stored.[245] Digital property law cannot, and should not, rest on such opaque foundations.[246]

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240. *See id.* at 4 (charging Snapchat with making "false or misleading" representations).

241. *Id.* at 3.

242. *See* Decision & Order, *In re* Snapchat, Inc., F.T.C. Docket No. C-4501 at 2 (ordering that Snapchat "shall not misrepresent in any manner, expressly or by implication, in or affecting commerce, the extent to which . . . its products or services maintain and protect the privacy, security, or confidentiality of any covered information") The order defined "covered information" broadly to include "any communications or content that is transmitted or stored through [Snapchat's] products or services." *Id.*

243. *See* Sheldon, *supra* note 202 ("A permanent deletion might make a file or account disappear from the user's view, but there's no telling what happens to the file behind the scenes.").

244. *See Secure Access Control for Cloud Storage*, IBM, http://www.research.ibm.com/haifa/projects/storage/cloudstorage/secure_access.shtml (last visited Mar. 6, 2017) (explaining how users manage their clouds) (on file with the Washington and Lee Law Review).

245. *See* Sheldon, *supra* note 202 (observing that deleted data might "still exist on the primary servers" or "might actually be deleted in some places, but still exist in others").

246. The "importance of clarity in property rights" cannot be overstated. Michael J. Burstein, *Rules for Patents*, 52 WM. & MARY L. REV. 1747, 1780 n.174 (2011).

C. The Need for a Solution

At this point, one might interject—why does all this matter? No one, after all, is forced to use cloud storage. Digital property owners are merely making a tradeoff: more convenience for less control. Isn't the answer to the problem to just simply forego the cloud altogether?

That solution, frankly, is no solution at all. The cloud is not a passing fad; it is the future of data storage, a future rapidly encroaching upon the present.[247] Furthermore, as Part III explained, many consumers are not even aware that they are participants in the cloud computing market.[248] Demanding that consumers choose between the cloud and property rights today is no different than demanding consumers choose between telephone networks and privacy rights decades ago. In *Katz v. United States*,[249] the Supreme Court clearly rejected that position.[250] Notably, the Court emphasized "the vital role that the public telephone has come to play in private communication"[251] and overturned a case it decided nearly four decades earlier.[252] Perhaps the passage of time between the two cases accounted for the Court's evolved view in applying old law to new technology. But we cannot wait decades; we have already entered the age of

247. *See supra* notes 160–163 and accompanying text (discussing the widespread and rapid adoption of cloud computing among individuals and businesses). Indeed, a recently released mobile device is "more tightly integrated with the cloud than just about any other smartphone, and the creators promise it will change the way we think about managing files on our tiny pocket computers." Chris Velazco, *Nextbit Robin Review: This Ambitious 'Cloud Phone' is Beautiful but Flawed*, ENGADGET (Nov. 11, 2016), http://www.engadget.com/2016/02/18/ nextbit-robin-review (last visited Mar. 6, 2017) (on file with the Washington and Lee Law Review).

248. *See supra* note 181 and accompanying text (discussing automatic cloud backup features on certain mobile devices).

249. 389 U.S. 347 (1967).

250. *See id.* at 359 (holding that the Fourth Amendment's protection from "unreasonable searches and seizures" applied to conversations made over public telephones).

251. *Id.* at 352.

252. *See* Olmstead v. United States, 277 U.S. 438, 466 (1928) (finding "the wires beyond [a person's] house and messages while passing over them are not within the protection of the Fourth Amendment").

the cloud.[253] Therefore, an actual solution—beyond simply abandoning cloud computing—is needed now.

V. Reclaiming the Right to Destroy

The problems discussed in Part IV are not limited to one particular context, but they tend to arise when people desire and make efforts to delete data that they have stored on the cloud.[254] Therefore, the answer ought to lie in reaffirming the property right most related to that concern: the right to destroy.[255] This Part will lay out that solution by first explaining why we should recognize the right to destroy in this emerging context and, second, how the cloud-maintained digital property owner can actually exercise this right.[256] It then concludes by briefly discussing the potential impact of the reaffirmed right to destroy on digital property governed by license agreements.[257]

A. Why We Should

1. Waste and Data

Waste is by far the prevailing justification for restricting the right to destroy.[258] The core of the argument is that because we live in a world of limited resources, and because the right to destroy permits property owners to waste these resources by destroying them at will, the right to destroy ought to be curtailed or even eliminated altogether.[259] This sounds reasonable, though

253. *See supra* notes 160–163 and accompanying text (discussing the present ubiquity of cloud computing).

254. *See supra* Part IV.A–C (noting problems regarding control, peace of mind, and ethics when cloud users are unable to delete their data maintained on the cloud with certainty).

255. *See supra* Part II (discussing the history of the right to destroy as recognized by Anglo-American law).

256. *Infra* Part V.A–B.

257. *Infra* Part V.C.

258. *See* Strahilevitz, *supra* note 9, at 821 (observing that "waste avoidance has been the primary basis for" curtailing the right to destroy).

259. *See id.* at 796 (noting that "where a living person seeks to destroy her

the strength of that logic would seem to be dependent on the uniqueness of the property.[260] But proponents of this "antiwaste sentiment," as well as its critics, have thus far considered the issue only within the context of tangible property.[261] This Note takes another path. Digital property maintained on the cloud is "electronic data" and data are inherently "intangible."[262] There are several reasons why it does not make sense to apply the public policy doctrine of waste to such property.

First, there is the chief distinction between digital property (but not necessarily all intangible property) and tangible property: replicability.[263] Indeed, every cloud-maintained file is necessarily a copy because the cloud user has uploaded her files to the cloud from some local source, be it a mobile device, hard drive, or any other storage system.[264] Thus, if the owner of a PDF e-book completely deletes her file, she is merely deleting her copy of that file. Even if her copy were one of only a few, virtually anyone possessing another copy of the file could probably create many, many copies within seconds, at zero cost.[265]

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property, the courts express concern about the diminution of resources available to society as a whole").

260. This is likely why most restrictions of the right to destroy arise in the context of real property. *See id.* (observing that "the most prominent set of cases prompting concerns about waste involve efforts by landowners to destroy their homes").

261. *See, e.g.*, *id.* at 821–22 (defending the right to destroy tangible goods); McCaffery, *supra* note 14, at 2 (discussing "waste" as "the dissipation or destruction of a permanent physical asset").

262. *See* Michael J. Madison, *Law as Design: Objects, Concepts, and Digital Things*, 56 CASE W. RES. L. REV. 381, 444 (2005) (noting that "electronic data . . . are ethereal and intangible, difficult to classify and more difficult to protect").

263. *See* Fairfield, *Bitproperty*, *supra* note 127, at 839–42 (discussing the "copying dilemma that has so hounded online property interests" and observing that, by contrast, "[i]t is easier to buy a table from someone than to duplicate it through copying").

264. *See supra* Part III.C (discussing the mechanics of cloud storage).

265. *See* ANANDA MITRA, DIGITAL SECURITY: CYBER TERROR AND CYBER SECURITY 82 (2010) (noting that it is possible to "make thousands of copies of a file and distribute them globally for no cost").

Conversely, if the owner of a paper book burns it to ashes, she is burning a one-of-a-kind item.[266] The effect of her act, that is, the degree of her waste, would depend on a number of variables, for instance, whether it was a mass-market paperback or a rare first edition.[267] Even if her book is one of a million printings, however, she has arguably engaged in waste by leaving the world with one less resource. Although that cost may be a fraction of a cent, the ledger recording society's collective resources must mark a loss nonetheless—and losses add up.

This rule is admittedly not universal. If the owner of the data in question is the one who created it, then its deletion *could* mean the loss of a unique resource. For instance, when a person takes a picture on her smartphone, the file initially exists just on that particular device (assuming a backup is not automatically stored in the cloud).[268] Yet this is the exception that proves the rule: antiwaste thought has never gone so far as to argue the creator of a thing lacks the right to destroy it.[269] That brings us to the second point: digital property stored on the cloud by individuals tends to be generated by the cloud user herself.[270] As waste is a "societal concern,"[271] it would be difficult to justify curtailing the

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266. *See* PETER TOREN, INTELLECTUAL PROPERTY AND COMPUTER CRIMES § 1.06 (2003) ("Prior to the digitization of information, copying was possible but it was time-consuming, expensive, and . . . not very efficient."); Don E. Tomlinson, *Journalism and Entertainment as Intellectual Property on the Information Superhighway: The Challenge of the Digital Domain*, 6 STAN. L. & POL'Y REV. 61, 64 (1994) ("Unlike a book, anything traveling on the information superhighway can be 'perfect-copy' captured . . . .").

267. *See* Strahilevitz, *supra* note 9, at 792–94 (noting the relationship between waste and value).

268. *See supra* note 196 and accompanying text (discussing cloud storage services that backup users' data automatically).

269. *See* Strahilevitz, *supra* note 9, at 830–35 (discussing "strong reasons to defer to the destructive wishes of those who have created cultural property, particularly when that property has not been published or publicly displayed").

270. *See, e.g.*, *One Thing Is Clear: People Love the Cloud*, VERIZON, https://www.verizonwireless.com/archive/mobile-living/tech-smarts/how-people-use-cloud-storage (last visited Mar. 6, 2017) (noting that most individual cloud users use it for personal files such as pictures) (on file with the Washington and Lee Law Review).

271. Strahilevitz, *supra* note 9, at 785.

right to destroy cloud-maintained data when only the digital property's owner is affected by its deletion.

Finally, it may actually be *prudent* to destroy digital property stored on the cloud. Data, as a practical matter, is difficult to control.[272] The burglar who steals something tangible has in her possession nothing more than that single tangible thing. By contrast, the hacker who steals digital property, such as an embarrassing image file, could instantly upload the data to the internet and thereby allow thousands of copies to fall into thousands of proverbial hands.[273] If the former theft is a single flame—still capable of burning, but manageable—the latter is a California wildfire.[274] The question, then, is how to prevent this potential conflagration.

There is no foolproof method. Security risks are always present when data and the internet collide, as with cloud storage.[275] Nevertheless, the power to delete is an essential safeguard against such risks; if the owner of a cloud-maintained file wants to be sure that the world will never see it, her only option is to delete it.[276] Consider the legal profession: the reason

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272. *See* Gervais & Hyndman, *supra* note 28, at 62–64 (discussing the difficulty of controlling data on the internet); McGillivray, *supra* note 21, at 234 ("Once information is uploaded to the cloud, it becomes very difficult, if not impossible, to control, track, or delete.").

273. *See, e.g.*, Duke, *supra* note 215 (discussing a "hacker's invasion of dozens of celebrity iCloud accounts, leading to the embarrassing leaking of nude photos").

274. Some have termed this phenomenon the "Streisand effect." *See* Justin Parkinson, *The Perils of the Streisand Effect*, BBC NEWS (July 31, 2014), http://www.bbc.com/news/magazine-28562156 (last visited Mar. 6, 2017) (on file with the Washington and Lee Law Review). Because "[t]he ease of sharing now almost means that nothing can really be suppressed," attempts to suppress leaked photos, for example, lead to those photos being copied and shared even further. *Id.*

275. *See* BRUCE SCHNEIER, DATA AND GOLIATH 140 (2015) ("In any security situation, there's a basic arms race between attack and defense. One side might have an advantage for a while . . . [but] then it changes back."). Schneier notes that, at present, "both on the Internet and with computers in general, the attacker has the advantage." *Id.* at 141.

276. *See, e.g.*, *How to Stop Compromising Pictures of You Being Published Online*, DMCA, http://www.dmca.com/FAQ/How-to-stop-compromising-pictures-of-you-being-published-online (last visited Mar. 6, 2017) (instructing internet users to "make sure" that files are deleted to prevent them from being

lawyers sometimes put clients' files through a shredder is not necessarily because they are obligated to do so, but because it is difficult to keep track of that file for a long period of time and thereby ensure it does not fall into improper hands.[277] Similarly, the only way to ensure that data does not reach the wrong person is to delete it.[278] Thus, the owner who destroys her cloud-maintained digital property is not only not being wasteful; she is being vigilant.

2. The Value of Deleting

It is not enough to show that antiwaste policies are inapplicable to cloud-maintained digital property; the right to delete such property must have some value in itself. Professor Strahilevitz's article, discussed throughout this Note, offers several justifications for the right to destroy generally.[279] For example, the right to destroy incentivizes prolific figures to preserve their thoughts on paper[280] and permits artists to engage

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"published online for all to see") (on file with the Washington and Lee Law Review). As one expert advises: "Any data you serve up to the cloud can be stored out there indefinitely, no matter how hard you try to delete it, so give careful consideration before sending sensitive information into the void." Sheldon, *supra* note 202.

277. *See* Jay G. Foonberg, *Preservation of Files: To Destroy or Not to Destroy*, *in* THE LAWYER'S GUIDE TO BUYING, SELLING, MERGING, AND CLOSING A LAW PRACTICE 171, 171–72 (Sarina A. Butler & Richard G. Paszkiet eds., 2008) ("File maintenance, closing, and destruction should be part of an in-place system in the law practice of every lawyer. . . . Without a file closing and destruction system in place, the lawyer or firm becomes a permanent unpaid warehouse service or bailee for the file.").

278. *See* Ash Mayfield, Comment, *Decrypting the Code of Ethics: The Relationship Between an Attorney's Ethical Duties and Network Security*, 60 OKLA. L. REV. 547, 600 (2007) ("Sometimes an attorney may need to permanently delete confidential data."); *supra* note 276 and accompanying text (discussing the importance of data deletion).

279. *See* Strahilevitz, *supra* note 9, at 808–21, 824–38 (discussing instances when "society" should "allow someone to remove a valuable, durable asset from the marketplace").

280. *See id.* at 814 (noting that when someone "anticipates that at a later date he will be able to decide whether to destroy an embarrassing, revealing, or controversial document, he will be more likely to create and save it in the first

in an important form of expression.[281] Moreover, in opposition to the criticism, Professor Strahilevitz contends that the right to destroy can even serve public policy, observing that "public policy rationales that seem plain in one era evaporate during another."[282]

This Note shall again take another path. The right to destroy is valuable because of its relationship to an owner's control over her property.[283] History reveals that this conception of the right is not entirely new.[284] In Ancient Rome, for example, recognition of the right to destroy provided a necessary premise in the syllogism securing property rights, which in turn secured control over property.[285] Likewise, the right to destroy recognized by the common law of England made clear that an owner's property rights were absolute.[286] As the issues discussed in Part IV all arise from an owner's lack of control over her cloud-maintained data,[287] it is this justification of the right to destroy that gives the right value in the context of cloud computing.

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place").

281. *See id.* at 824 ("Because the destruction of a wooden cross, an American flag, or a draft card conveys an obvious political or social message, courts contemplating property destruction in the First Amendment context generally have proved sympathetic to the interests of the destroyers.").

282. *Id.* at 799. Discussing *Eyerman*, Strahilevitz notes that "[a] homeowner's gift of open space in a built-up neighborhood might seem like an act of generosity, not capriciousness, to the modern reader." *Id.* at 799–800.

283. *See supra* notes 23, 197–201 and accompanying text (discussing property rights as granting an owner control over property).

284. *See supra* Part II.A–B (addressing the history of the right to destroy).

285. *See* Strahilevitz, *supra* note 9, at 785–86 ("Under Roman law . . . destruction functioned as the most extreme recognized property right, so the owner who could destroy his property necessarily had the right to use it in less extreme fashions."). The logic, somewhat restated, is this: An owner has the right to destroy her property. To destroy property is to exceed merely using it, transferring it, or excluding it from others. Therefore, if the owner has a right to destroy, she must necessarily have those lesser rights.

286. *See* 3 WILLIAM BLACKSTONE, COMMENTARIES *223–24 (explaining that "if a man be the absolute tenant in fee-simple . . . he may commit whatever waste his own indiscretion may prompt him to, without being impeachable or accountable for it to any one"). Blackstone, as discussed, viewed English property rights as absolute. *See supra* Part II.B (discussing the right to destroy developed through English common law).

287. *See supra* Part IV.A (discussing an owner's lack of control over her data

The power to delete serves unique purposes in the age of digital property.[288] The right to destroy has been called "an extreme right to control subsequent alienation,"[289] but when it comes to cloud-maintained data, destruction might be the only means of controlling subsequent alienation. Recall the hypothetical discussed in this Note's introduction.[290] The owner of a photograph can control subsequent alienation in several ways. By simply possessing it, she necessarily prevents others from possessing it.[291] By keeping it in her home, she can generally control who uses it. By handing it to a friend, she can be sure that the friend receives it. Finally, by burning it, she can be sure that no one will ever possess it, use it, or transfer it again.[292]

These methods are unavailable to the owner of a digital picture stored on the cloud. She may possess the file, in the sense that she can access it, but this does not prevent others from possessing it.[293] Indeed, the cloud storage provider clearly possesses it, thereby placing "subsequent alienation" more or less in its hands.[294] The owner may be able to set permissions as to

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maintained on the cloud).

288. *See generally* VIKTOR MAYER-SCHONBERGER, DELETE: THE VIRTUE OF FORGETTING (2009) (discussing the dangers of "everlasting digital memory").

289. Strahilevitz, *supra* note 9, at 794.

290. *See supra* notes 25–33 and accompanying text (illustrating how destroying a tangible photograph differs from deleting a digital picture, which in turn differs from attempting to delete a digital picture maintained on the cloud).

291. *See* Fairfield, *Bitproperty*, *supra* note 127, at 864–65 ("If person A holds a rivalrous resource, person B does not."). Although not universally so, "traditional personal property" is both "rival and tangible." *Id.* at 865.

292. Strahilevitz, *supra* note 9, at 794 (noting that "by destroying [property], I permanently exclude third parties from using it . . . . I use it up . . . [and] prevent it from ever being resold or used in a manner that displeases [me]").

293. *See* Gold, *supra* note 175, at 2334 ("Cloud account holders can share their materials with other account holders, and more than one person can use the same account from different locations.")

294. *See, e.g.*, *iCloud Terms and Conditions*, APPLE, http://www.apple.com/legal/internet-services/icloud/en/terms.html (last updated Feb. 5, 2017) (last visited Mar. 6, 2017) (providing that "Apple may, without liability to you, access, use, preserve and/or disclose your Account information and Content to law enforcement authorities, government officials, and/or a third party, as Apple believes is reasonably necessary or appropriate") (on file with the Washington and Lee Law Review). Apple defines "Content" broadly to include "music,

who can access the file on the cloud,[295] but she cannot ensure these commands will be heeded.[296] In other words, while the owner of the tangible photograph can simply hand it over to a friend, the owner of the cloud-maintained digital picture must ask the cloud storage service to give her friend access and at the same time trust the service to not grant access to any other. What was once a straightforward transaction becomes roundabout in the world of the cloud.

That is why the right to destroy is valuable. If recognized, and properly enforced,[297] the right will allow the cloud user to fully control her data, because destruction is unequivocal; actually deleting digital property is the same as actually destroying tangible property.[298] It is true that the nature of cloud computing makes it difficult for the owner of digital property to govern who can access it, possess it, and use it.[299] With respect to such property, however, the right to destroy can not only evince the existence of these less extreme property rights,[300] but secure them as well.[301]

The right to destroy is also necessary to secure an ever-increasing concern of the twenty-first century: privacy.[302]

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graphics, photographs, images, sounds, videos, [and] messages." *Id.*

295. *See* Gold, *supra* note 175, at 2334 (discussing how cloud users can share their files with others).

296. *See supra* notes 211–214 and accompanying text (discussing the cloud user's lack of control over her cloud-maintained data and specifically an instance where "Dropbox mishandled access permissions to files stored on its servers").

297. *See infra* Part V.B (explaining how we can reaffirm the right to destroy).

298. *See infra* Part V.B.2 (discussing methods of effective deleting electronic data).

299. *See, e.g.*, Martin, *supra* note 202, at 295–96 (including the uncertainty of "ownership and control of online data" among "concerns that create barriers to wider acceptance of cloud computing").

300. *See* Strahilevitz, *supra* note 9, at 788 (discussing the view that if an owner has "the right to destroy property, he certainly [has] the right to use or dispose of it in a less dramatic manner").

301. *See supra* notes 272–278 and accompanying text (explaining why cloud users must have the ability to delete data as a matter of prudence).

302. *See* SCHNEIER, *supra* note 275, at 125–34 (discussing the dangers of "mass surveillance . . . being done by algorithms"); Strahilevitz, *supra* note 9, at

Destruction, after all, is the ultimate security measure.[303] Shredders do not exist because people enjoy seeing paper transformed to confetti; they exist because people need a way to ensure that written information remains private.[304] In that respect, digital property is no different. As a data security tool, the power to delete is critical because it is the best means of ensuring data remain private.[305]

B. How We Can

1. Securing the Right

Although the law may disfavor the right to destroy, the right itself is not dead; yet, it lives merely as an implicit right.[306] This is not an ideal state of things with respect to the cloud, which is itself plagued by uncertainty.[307] After all, property rights hold

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786 (noting that "protecting the right to destroy can enhance social welfare by protecting privacy").

303. *See, e.g.*, Mayfield, *supra* note 278, at 573 (noting that "an attorney must shred files that contain confidential information before they are deposited in the trash"); Beth Givens, *Prevent Identity Theft with Responsible Information-Handling Practices in the Workplace*, PRIVACY RTS. CLEARINGHOUSE (Mar. 1, 2004), https://www.privacyrights.org/blog/prevent-identity-theft-responsible-information-handling-practices-workplace (last updated June 2009) (last visited Mar. 6, 2017) (discussing the importance of ensuring destruction to data privacy and security) (on file with the Washington and Lee Law Review).

304. *See* Strahilevitz, *supra* note 9, at 813 (noting that "presidents and other public officials" do not destroy their private papers "irrationally," but "to protect their privacy and the privacy of their associates").

305. *See, e.g.*, MICROSOFT, PROTECTING DATA AND PRIVACY IN THE CLOUD 10 (2014), http://goo.gl/WbJFT2 (noting that data are deleted so "customers' data privacy is maintained"); *Secure Deletion Guideline*, U.C. BERKELEY, http://security.berkeley.edu/secure-deletion-guideline (last visited Mar. 6, 2017) ("Resource Custodians must ensure [the deletion of files because] . . . [s]torage media are prone to physical theft and loss [and u]nauthorized parties can acquire unencrypted data stored on the device.") (on file with the Washington and Lee Law Review).

306. *See supra* Part II.D (discussing the present state of the right to destroy).

307. *See supra* notes 202–206, 225–230 and accompanying text (observing the cloud user's lack of control and the ambivalence of cloud storage terms of service agreements).

little meaning unless they are "secured by clear laws."[308] The right to destroy must thus be both acknowledged and *explicitly* recognized by the law if owners are to regain control of their cloud-maintained digital property.

Property rights, generally speaking, are creatures of common law.[309] An owner does not acquire a "bundle of rights" in her property by statute.[310] Indeed, possessing, using, excluding, and transferring property are so bound up with the idea of ownership that it is difficult imagining an Anglo-American system of property without those rights.[311] In that sense, the right to destroy is a bit of an anomaly. Many courts consider it a less important right and some have not hesitated to restrict it.[312] Legal commentators, meanwhile, attack the right while leaving the others in the bundle unscathed.[313] Furthermore, the long history of the right does not change the fact that property owners rarely destroy their valuable property.[314] The product of these factors is that courts may be more inclined to eschew common law tradition when it comes to the right to destroy.[315]

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308. *Property Rights*, 2017 INDEX ECON. FREEDOM, http://www.heritage.org/index/property-rights (last visited Mar. 6, 2017) (on file with the Washington and Lee Law Review).

309. *See, e.g.*, Denise R. Johnson, *Reflections on the Bundle of Rights*, 32 VT. L. REV. 247, 248 (2007) ("Common law principles are the primary source of property law.").

310. *See id.* at 257 (discussing "the bundle of rights and the common law property rules that make up the bundle in each state").

311. *See id.* at 268 (noting that property rights "are so much a part of the American psyche" that "[t]hese rights have been bound up with the preservation of private property and landed interests from the revolution forward").

312. *See supra* Part II.C.1 (discussing cases limiting the right to destroy).

313. *See, e.g.*, Strahilevitz, *supra* note 9, at 783 (noting that *Black's Law Dictionary* removed references to the right to destroy from its definition of "owner," but retained "the right[s] to possess, use, and convey something"); *supra* Part II.C.2 (discussing scholarly works advocating for limitations of the right to destroy).

314. *See* Strahilevitz, *supra* note 9, at 794 (observing that owners destroy valuable property rarely and that even though "[l]ess valuable kinds of property are destroyed all the time, . . . the low stakes involved . . . keep any resulting disagreements out of the courts").

315. *See id.* at 852 (concluding that "[t]he recent trend in American law has been to curtail property owners' traditional rights to destroy their own

However, the caselaw limiting the right to destroy concerns tangible, usually real property;[316] scholarly condemnation of the right to destroy arises predominantly in the context of waste;[317] and the (attempted) deletion of data is far more commonplace than the destruction of property in the physical world.[318] Courts should acknowledge that digital property maintained in the cloud falls outside the scope of the classic right to destroy jurisprudence[319] and accordingly construe precedents restricting the right to destroy narrowly. They should then look towards the common law, where they will find the long recognized right to destroy.[320] The concept of cloud storage may be new, but the right to destroy is not.[321] As this Note has made clear, the truth is quite the opposite.[322] Courts would thus be fully justified in relying on a traditional right derived from the common law to solve this twenty-first century problem.

The best feature of this solution is that it is both simple and readily implementable.[323] Courts, as discussed above, need only consult the long history of the right to destroy, recognize that precedents restricting it are inapplicable to data stored on the cloud, and, accordingly, affirm that the owner of cloud-maintained digital property has the right to delete it. Although

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property").

316. *See supra* Part II.C.1 (discussing the common contexts of right to destroy cases).

317. *See supra* Parts II.C.2, V.A.1 (noting that waste avoidance is the "prevailing justification" for efforts to limit the right to destroy).

318. *Compare supra* notes 272–278 and accompanying text (discussing why owners ought to destroy digital property), *with* Strahilevitz, *supra* note 9, at 794 (noting that a property owner is not likely to want to destroy her valuable property).

319. *See supra* Part V.A.1 (arguing that waste concerns are far less pronounced in the digital property context).

320. *See* Strahilevitz, *supra* note 9, at 783 (observing that the right to destroy is "a long-recognized right of property owners").

321. *See id.* at 787–88 (discussing the right to destroy "in antiquity").

322. *See supra* Part II.A (tracing the early history of the right to destroy).

323. *See* Joshua A.T. Fairfield, *Anti-Social Contracts: The Contractual Governance of Virtual Worlds*, 53 MCGILL L.J. 427, 466 (2008) [hereinafter Fairfield, *Anti-Social Contracts*] (noting that "the common law is an immediately available tool to solve problems related to emerging technologies").

there do not seem to be any instances of courts ordering destruction for the purpose of respecting an owner's right to destroy her property,[324] courts frequently order the destruction of property, as well as the deletion of intangibles, in other contexts.[325] Moreover, as Chief Justice Marshall famously stated over two centuries ago, "it is a general and indisputable rule that where there is a legal right, there is also a legal remedy by suit or action at law whenever that right is invaded."[326] What is a property right if not a legal right?

The alternative solution would be to secure the right by statute.[327] It is true that a positive law that spells out in clear terms (1) that owners of cloud-maintained digital property have the right to delete their data and (2) what cloud providers must do to ensure its deletion would definitively secure the right discussed above. Indeed, in the best of worlds, such a statute would be a good thing. But there are a number of difficulties with this approach.

First, it is *not* readily implementable.[328] If we were to rely solely on statutory law, cloud users seeking to ensure the destruction of their cloud-maintained digital property would be without recourse until such a time as when the statute is enacted. Hence, the second disadvantage: the lawmaking process

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324. This should not be surprising, given that ownership rights and possession of the property have historically gone hand in hand. *See, e.g.*, O.W. HOLMES, THE COMMON LAW 241 (The Lawbook Exchange, Ltd. 2005) ("The consequences attached to possession are substantially those attached to ownership . . . ."). Thus the owner could readily exercise her right to destroy without the need for judicial recourse.

325. *See, e.g.*, Elektra Entm't Grp., Inc. v. Crawford, 226 F.R.D. 388, 395 (C.D. Cal. 2005) ("Defendant [shall] destroy all copies of Plaintiffs' Recordings that Defendant has downloaded onto any computer hard drive or server without Plaintiffs' authorization and destroy all copies of those downloaded recordings transferred onto any physical medium or device in Defendant's possession, custody, or control.").

326. Marbury v. Madison, 5 U.S. 137, 163 (1803).

327. *See* Johnson, *supra* note 309, at 248 ("Property law comes from three sources: the common law, statutes, and the Constitution.").

328. *See* Fairfield, *Anti-Social Contracts*, *supra* note 323, at 465–68 (discussing the comparative advantages of common law over law legislatures develop).

is sluggish.[329] Years, if not decades, could go by before cloud users obtain the right to delete cloud-maintained data. Finally, it is unclear what the statute would actually look like. One can only imagine the series of debates regarding the purpose, scope, and enforcement of this hypothetical law.[330] Perhaps we could look internationally for inspiration, where the concept of a "right to delete" has gained much traction in the data-privacy context.[331] This idea, however, has apparently fallen on deaf ears in the United States; it "is the only Western country without basic data protection laws."[332] Moreover, legislatures have historically been unreliable in the field of digital property.[333] If Congress has yet to act in these arenas, can it really be expected to act when it comes to the right to delete cloud-maintained data?

This is not to say a statute enshrining the right to destroy cloud-maintained data is unwanted. Quite the contrary, a congressional enactment would clearly cement the legitimacy of the common law right to destroy. But, for better or worse, we "live in a common law regime."[334] A statute, therefore, is not needed. Anglo-American law once recognized the right to destroy as fundamental[335] and it should do the same today. Once courts, for the reasons noted above, recognize the right to destroy in the new context of cloud-maintained digital property, cloud users will finally be able to wrest control over their data from the hands of cloud providers.

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329. *See* Gary Lawson, *Judicial Supremacy Today: Interpretative Equality as a Structural Imperative (Or "Pucker Up and Settle This!")*, 20 CONST. COMMENT. 379, 382 (2003) ("The lawmaking process is slow, cumbersome, and difficult.").

330. *See* Fairfield, *Anti-Social Contracts*, *supra* note 323, at 466–67 (noting that "technology legislation is infamous for creating unforeseen consequences" and that such legislation "is often sweeping").

331. *See* SCHNEIER, *supra* note 275, at 200–03 (discussing the data protection laws of the European Union).

332. *Id.* at 200.

333. *See* Fairfield, *Virtual Property*, *supra* note 133, at 1091–92 (discussing why "there is little reason to think that the United States will reach an effective legislative solution to the virtual property problem").

334. *Id.* at 1091.

335. *See supra* Part II.B (discussing the right to destroy at common law).

2. Enforcing the Right

It is one thing to secure the right to destroy by law; it is another to be able to actually execute that right. The chief impediment in that respect is the sheer resiliency of data.[336] In other words, the question is whether cloud-maintained digital property is even capable of deletion. Strictly speaking, the answer is no.[337] As observed at the outset of this Note, the only way to absolutely guarantee the destruction of a file is to destroy the physical device containing it.[338] Physical destruction, however, is no solution for the cloud user. After all, the servers do not belong to her in the first place.[339] It would be patently unreasonable to demand that Google, for example, smash one of its servers to bits to ensure the deletion of another's file taking up a tiny fraction of the server's space. Therefore, we must define "destroy" more broadly to encompass the *effective* deletion of data.

One method of effectively deleting data is by overwriting it.[340] In fact, data cannot even be considered deleted unless it is overwritten because simply deleting a file "just makes the file

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336. *See* NAT'L COMPUT. SEC. CTR., A GUIDE TO UNDERSTANDING DATA REMANENCE IN AUTOMATED INFORMATION SYSTEMS 1 (1991), http://www.dtic.mil/cgi-bin/GetTRDoc?Location=U2&doc=GetTRDoc.pdf&AD=ADA393188 (noting that "[d]ata remanence is the residual physical representation of data that has been in some way erased" and discussing "the role data remanence plays when storage media is erased").

337. *See, e.g.*, Krause, *supra* note 26, at 46 ("Deleting files is so difficult that only extreme measures may work."); McGillivray, *supra* note 21, at 234 ("Once information is uploaded to the cloud, it becomes very difficult, if not impossible, to control, track, or delete.").

338. *See* Krause, *supra* note 26, at 46 (quoting an expert as stating that "[t]he only way to completely erase a hard drive is to take it out of the computer and smash it with a hammer").

339. *See* Sandeen, *supra* note 148, at 14 (recognizing that using the cloud entails using "the database storage facilities of a third party"); *supra* Part III.C (providing an overview of cloud storage).

340. *See How to: Delete Your Data Securely on Windows*, ELECTRONIC FRONTIER FOUND., http://ssd.eff.org/en/module/how-delete-your-data-securely-windows (last updated Mar. 5, 2015) (last visited Mar. 6, 2017) ("The best way to delete a file forever . . . is to make sure it gets overwritten immediately, in a way that makes it difficult to retrieve what used to be written there.") (on file with the Washington and Lee Law Review).

invisible" and marks the space it once occupied as available.[341] Overwriting a file may not guarantee its obliteration,[342] but it is generally accepted that overwritten data cannot be recovered.[343] Thus, to ensure the destruction of cloud-maintained digital property, cloud providers should immediately overwrite data marked for deletion with new or even existing data. Given the sheer volume of data stored on the cloud,[344] this should not be a problem.

There is a problem, however, in that overwriting is only effective for traditional, magnetic-based storage like hard disk drives (HDDs).[345] Today, most companies operating server farms—such as cloud storage providers—have upgraded to solid-state drives (SSDs), which are based on flash memory.[346] There

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341. *Id.*

342. *See* Daniel Feenberg, *Can Intelligence Agencies Read Overwritten Data?*, NAT'L BUREAU ECON. RES. (July 21, 2003), http://www.nber.org/sys-admin/overwritten-data-gutmann.html (last modified Mar. 24, 2004) (last visited Mar. 6, 2017) (acknowledging "that overwritten bits might be observable under certain circumstances") (on file with the Washington and Lee Law Review).

343. *See id.* (arguing that overwritten data are generally inaccessible); RICHARD KISSEL ET AL., U.S. DEP'T OF COMMERCE, GUIDELINES FOR MEDIA SANITIZATION 7 (2014), http://nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.800-88r1.pdf (reporting that "a single overwrite . . . typically hinders recovery of data even if state of the art laboratory techniques are applied to attempt to retrieve the data").

344. *See* CISCO, CISCO GLOBAL CLOUD INDEX: FORECAST AND METHODOLOGY, 2015–2020, at 13 (2015), http://www.cisco.com/c/en/us/solutions/collateral/service-provider/global-cloud-index-gci/Cloud_Index_White_Paper.pdf (reporting "per-user traffic" of cloud storage at "513 MB per month in 2015" and forecasting "1.7 Gigabytes (GB) per month by 2020").

345. *See How to: Delete Your Data Securely on Windows*, *supra* note 340 (providing instructions on how to overwrite data, but noting that the instructions "apply only to traditional disk drives").

346. *See* Cade Metz, *Flash Drives Replace Disks at Amazon, Face-Book, Dropbox*, WIRED (June 13, 2012, 6:30 AM), http://www.wired.com/2012/06/flash-data-centers (last visited Mar. 6, 2017) ("Dropbox is running servers equipped with solid-state drives . . . . Such names as Facebook, Amazon, Microsoft, Mozilla, and Wikia are also using solid-state storage in their data centers, and judging from anecdotal evidence, the trend goes even further.") (on file with the Washington and Lee Law Review).

are numerous distinctions between HDDs and SSDs,[347] but relevant here is the fact that overwriting does little to secure the deletion of data stored on the latter kind of device.[348] As a result, "it is difficult, if not impossible, to securely delete both individual files and free space" from SSDs.[349]

So is the right to delete digital property stored in the cloud a moot point? Not at all. Data stored on solid-state drives can still be *effectively* deleted through encryption.[350] This approach entails using "a cryptographic key to encrypt and decrypt incoming and outgoing data"[351] and deleting the key to "effectively sanitiz[e] the data by preventing read-access."[352] In other words, the digital files are locked and can only be accessed through a key; throw away the key and they are essentially rendered inaccessible.[353] Then they can be overwritten or otherwise deleted with little worry.[354] Even if the files have not truly vanished, they cannot be

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347. *See, e.g.*, Brendan Hesse, *Solid State Drives vs. Hard Drives: Which Is Right for You?*, DIGITAL TRENDS (June 26, 2015), http://web.archive.org/web/20160304083634/http://www.digitaltrends.com/computing/solid-state-drives-vs-hard-disk-drives (last visited Mar. 5, 2017) (discussing the "pros and cons of both technologies") (on file with the Washington and Lee Law Review).

348. *See* MICHAEL WEI ET AL., RELIABLY ERASING DATA FROM FLASH-BASED SOLID STATE DRIVES 1 (2011), https://www.usenix.org/legacy/events/fast11/tech/full_papers/Wei.pdf ("Single-file sanitization [or data erasing] techniques . . . consistently fail to remove data from the SSD."). Although "overwriting the entire disk twice [is] sufficient to sanitize the disk," *id.* at 6, for obvious reasons cloud storage providers cannot be required to overwrite an entire solid-state drive to conform with a cloud user's request to delete her data, which will typically take up a small fraction of it.

349. *How to: Delete Your Data Securely on Windows*, *supra* note 340; *see also* WEI ET AL., *supra* note 348, at 7 ("None of the [single-file overwriting] protocols tested successfully sanitized the SSDs or the USB drive in all cases.").

350. *See* WEI ET AL., *supra* note 348, at 2 ("An alternative approach to overwriting or otherwise obliterating bits is to cryptographically sanitize storage.").

351. *Id.*

352. Kissel et al., *supra* note 343, at 9.

353. *See* WEI ET AL., *supra* note 348, at 6 ("[D]eleting the encryption key will, in theory, render the data on the drive irretrievable.").

354. *See How to: Delete Your Data Securely on Windows*, *supra* note 340 (observing that "even if the file is still on the disk, it will at least look like gibberish to anyone who gets ahold of it").

accessed and thus cannot be used, alienated, or controlled in any meaningful sense, assuaging the concerns underlying the right to destroy.[355] Although this method is not foolproof,[356] it is the best means available to cloud users seeking to properly enforce their legal right to delete digital property stored on the cloud.[357]

C. One Caveat: The Trouble with Terms

Up until this point we have discussed the right to destroy digital property with the assumption that the one seeking to exercise that right owns the property. But as a result of long, complex, and almost universally unread agreements, much of what we consider to be "our" digital property—from eBooks to MP3s to video games—is not sold to us, but licensed.[358]

One subset of such licensed digital property that might be called virtual property best demonstrates this "terms of use" problem.[359] Such property may only "exist" within a specific virtual world, but there are nevertheless markets wherein the virtual property can be exchanged for real-world money.[360] This is despite the fact it is almost universally the creator of the virtual

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355. *See supra* notes 23, 200 and accompanying text (discussing the relationship between the right to destroy and an owner's control over her property).

356. *See* WEI ET AL., *supra* note 348, at 6 (noting the disadvantages of sanitizing data through encryption and concluding that "it is unduly optimistic to assume that SSD vendors will properly sanitize the key store").

357. *See supra* Part V.A (arguing that the right to destroy should encompass the right to delete cloud-maintained data).

358. *See* Fairfield, *Bitproperty*, *supra* note 127, at 839 (observing that "[p]roperty rights in digital copies of copyrighted material" are typically subject to "end user license agreements"); Michael Seringhaus, *E-Book Transactions: Amazon "Kindles" the Copy Ownership Debate*, 12 YALE J.L. & TECH. 147, 149, 162 n.68 (2010) (noting that Amazon Kindle "license terms prevent buyers from actually owning [e-]books" and discussing the bevy of restrictions and terms found in the "iTunes EULA").

359. *See* Fairfield, *Virtual Property*, *supra* note 133, at 1050 (arguing that "holders of intellectual property rights have been systematically eliminating emerging virtual property rights by the use of contracts").

360. *See id.* at 1061 ("Within virtual environments, virtual objects of all types change hands for real money.").

world, as opposed to the individual who buys, sells, trades, and uses the virtual property, who owns the virtual property.[361] Therein lies the rub: if we simply reaffirm and reinforce the right to destroy in the current digital landscape,[362] those who use, trade, buy, and sell various virtual assets will be unprotected from the actual owner of the property's exercise of the right. Is there any way to avoid this pitfall?

This leads us to an issue every discussion of the right to destroy must inevitably address: whether the right should be absolute. Even the most ardent defenders of the right to destroy, however, do not argue for an absolute right.[363] This Note is no exception. Although waste is of little concern in the digital property context,[364] for the reasons discussed above, the right to destroy ought to be limited with respect to digital property secured through licensing agreements.[365]

This caveat to the solution offered in Part V.B can likewise be achieved through the common law.[366] Courts should recognize a new public policy exception for the right to destroy with respect to virtual property. This would not be unprecedented.[367] Courts limiting the right to destroy have typically done so on the basis of how the destruction of a particular piece of property would affect

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361. *See id.* at 1063 ("Although hundreds of millions of dollars change hands annually for virtual houses, chairs, money, clothes, or the like, . . . rights in virtual property are either not enforced, or are expressly prohibited by the creator of the virtual environment, who holds the intellectual property interest in the environment itself.").

362. *See supra* Part V.A–B (arguing why and how courts should recognize the right to destroy).

363. *See, e.g.*, Strahilevitz, *supra* note 9, at 785, 796–803 (concluding that "the right to destroy should [not] be absolute" and "identify[ing] a few contexts and considerations in which restrictions on the destruction of property are highly desirable").

364. *Supra* Part V.A.1.

365. For simplicity and brevity, this Note will refer to such property as "virtual property."

366. *See supra* notes 323–335 and accompanying text (arguing for a common law solution to the problem of being unable to reliably delete cloud-maintained digital property).

367. *See supra* Part II.C.1 (discussing caselaw exceptions to the right to destroy).

someone other than the owner.[368] That is exactly the basis for this proposed exception. In the case of virtual property, a virtual world provider that deletes the virtual property it holds intellectual rights to is far less affected by that act than the *user* of the virtual property who has potentially invested time, money, or even other virtual goods into it.[369] While sweeping limitations on the right to destroy ought to be generally discouraged, when ownership becomes a "strange amalgam[] of contract, licensing, and pseudoproperty law,"[370] the right must be more carefully construed.

VI. Conclusion

Today, most of us are digital property owners, whether we make movies with our Samsung Galaxy or dictate notes to Siri or simply take "selfies" on the latest smart device. Tomorrow, cloud storage will be the primary—if not default—way we maintain such property. This is not a bad thing in itself. The convenience of being able to access our videos, writings, photographs, and other kinds of digital property no matter where we are or what equipment we are using is nothing short of amazing. But even if technology marches on, that is no reason to let property rights fall by the wayside. We cannot allow a fundamental underpinning of property ownership—control—to be swept up in the cloud.

The severance of control from possession is a uniquely modern problem stemming from what seems like a perfect storm of technological developments. Yet, somewhat ironically, it highlights the advantages of our old but adaptable common law system. As proposed by this Note, we can solve this problem by affirmatively reaffirming and reinforcing the right to destroy. As the foregoing discussion makes clear, this solution is both

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368. *See, e.g.*, Eyerman v. Mercantile Tr. Co., 524 S.W.2d 210 (Mo. Ct. App. 1975) (refusing to enforce a testator's will provision to raze her house because "[d]estruction of the house harms the neighbors, detrimentally affects the community, causes monetary loss in excess of $39,000.00 to the estate and is without benefit to the dead woman").

369. *See* Fairfield, *Virtual Property*, *supra* note 133, at 1062 (observing "the amount of current investment and interest in virtual worlds").

370. Fairfield, *Bitproperty*, *supra* note 127, at 810.

desirable *and* feasible. All that is required is to implement it. By doing so, owners of digital property maintained in the cloud will be able to exert the same rights property law promises to owners of tangible property existing in the real world.

The right to destroy is not just an ancient concept or a relic of common law to be tossed aside in favor of a more "enlightened" framework of property.[371] It is a right newly relevant, and wholly adaptable, to the modern system of digital property. It can and should become the right to delete—the right to disperse the cloud.

371. *Cf.* McCaffery, *supra* note 14, at 81 (referring to the right to destroy as "an embarrassment in Anglo-American law").