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## Blockchain Wills

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## Blockchain Wills

BRIDGET J. CRAWFORD\*

*Blockchain technology has the potential to radically alter the way that people have executed wills for centuries. This Article makes two principal claims—one descriptive and the other normative. Descriptively, this Article suggests that traditional wills formalities have been relaxed to the point that they no longer serve the cautionary, protective, evidentiary, and channeling functions that scholars have used to justify strict compliance with wills formalities. Widespread use of digital technology in everyday communications has led to several notable cases in which individuals have attempted to execute wills electronically. These wills have had a mixed reception. Four states currently recognize electronic wills. The Uniform Law Commission approved a Uniform Electronic Wills Act in July 2019, so it is likely that even more states will permit these documents. This Article identifies some of the weaknesses in existing state statutes and the model law and considers how technology can address those problems.*

*This Article explores how blockchain, the open-source technology underlying cryptocurrency like Bitcoin, could be harnessed to create a distributed ledger of wills that would maintain a reliable record of a testator's desires for the post-mortem distribution of estate assets. These blockchain instruments easily could qualify as wills under existing substantial compliance doctrine or the Uniform Probate Code's harmless error rule. Blockchain wills would serve the true purpose of wills formalities—which is to authenticate a document as the one executed by the testator with the intention of having it serve as the binding directive for the distribution of her property. By uniting blockchain technology with the innovations of the best aspects of electronic wills legislation, a blockchain will could serve as a reliable, authentic, and secure record of a decedent's last wishes for disposition of her property.*

*This Article's account has important implications for the legal profession. As financial institutions and governments have moved to develop blockchain-based solutions for the delivery of services, lawyers have lagged behind. In some legal circles, attorneys have become interested in "smart contracts" and the possibility of using blockchain to create a more accurate record of real property deeds. But most lawyers have not yet invested the requisite time and energy needed to understand how blockchain works and to develop systems that would use the technology effectively. By demonstrating how blockchain could make wills cheaper to prepare and less susceptible to tampering, this Article also points to multiple other uses for blockchain in the legal profession, including authentication of chain of ownership, record-keeping, and drafting of all kinds. Even though lawyers have been slow to*

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\* Bridget J. Crawford is a Professor of Law at the Elisabeth Haub School of Law at Pace University. David J. Herzig first introduced me to the possibility of "blockchain wills" and he played an indispensable role in the development of the ideas and structure of this Article. For helpful comments and conversations, I thank Noa Ben-Asher, Alex Boni-Saenz, Susan N. Gary, Jill I. Gross, David J. Herzig, Frances Simone Kratz, Katrina Fischer Kuh, William LaPiana, Ray Madoff, Thomas M. McDonnell, Vanessa H. Merton, Michael M. Mushlin, Jason Parkin, Margot J. Pollans, Audrey Rogers, Michelle S. Simon, Lee-ford Tritt, and Leslie Y. Tenzer.

*harness blockchain's potential, the technology holds the promise to transform the practice of law into a form that will be unrecognizable to today's lawyer.*

#### CONTENTS

INTRODUCTION.....	736
I. THE TREND AWAY FROM TRADITIONAL WILLS FORMALITIES .....	740
A. <i>Uniform Lawmakers Eschew Traditional Formalities</i> .....	740
B. <i>Everyday Testators Depart from Traditional Formalities</i> .....	742
1. Cursive Font as a Signature .....	742
2. The Samsung Galaxy Will.....	744
3. The Unsigned LegalZoom Will.....	746
4. The Suicide Note .....	749
5. The Australian iPhone Note with Typed Name at End.....	750
6. The Australian Unsent Text Message.....	752
C. <i>Moving Toward Electronic Wills</i> .....	755
II. ELECTRONIC WILLS ACTS.....	756
A. <i>Overview</i> .....	756
B. <i>The Uniform Electronic Wills Act</i> .....	757
1. Simple but Revolutionary Changes .....	757
2. Anticipated Challenges to E-Wills Act.....	762
C. <i>State-Specific Electronic Wills Laws</i> .....	763
D. <i>Lessons from the Florida Experiment: Electronic Wills Rejected and then Adopted</i> .....	767
1. Objections of the Organized Bar of the Initial Florida Legislation.....	767
2. Objections of the Governor.....	768
3. Successful Legislation .....	769
E. <i>Solving Open Questions About Electronic Wills</i> .....	771
III. BLOCKCHAIN IN THE TWENTY-FIRST CENTURY ECONOMY .....	772
A. <i>Overview of Blockchain</i> .....	772
B. <i>Questions and Problems Associated with Cryptocurrencies</i> .....	776
C. <i>Development of Distributed Ledgers for Financial Markets and Institutions</i> .....	777
D. <i>Other Uses of Blockchain</i> .....	778
1. Corporate Applications.....	778
2. Governmental Applications.....	780
3. Other Applications.....	780
IV. BLOCKCHAIN WILLS .....	783
V. BLOCKCHAIN AND THE FUTURE OF ESTATE PLANNING.....	785
CONCLUSION.....	786

#### INTRODUCTION

Technological or design changes that are intended to benefit a limited group of people may have a salutary impact beyond the targeted population. Consider, for example, a curb cut: the modestly declining cement ramp that allows people in wheelchairs to move freely and independently across streets without navigating high curbs. Owing to advocacy by Jack H. Fischer, a disabled World War II veteran and

Harvard Law School graduate, the City Commission of Kalamazoo, Michigan, installed the first known curb cuts in the United States in 1945.<sup>1</sup> After years of local and national organizing and advocacy by disabled individuals and their allies, Congress finally enacted the Americans with Disabilities Act of 1990,<sup>2</sup> which requires, among other things, reasonable accommodations for all persons with known physical or mental disabilities in all places of employment and facilities, agencies, and businesses that serve the public.<sup>3</sup> As a practical matter, this law meant that cities had to incorporate curb cuts into their planning efforts. Opposition to the Americans With Disabilities Act came from many corners.<sup>4</sup> Chief among these critics were municipalities and local public transportation systems that believed they were unfairly forced to spend money to install curb cuts that would benefit a small group of individuals.<sup>5</sup>

Scholars subsequently have observed a curious positive externality, which some call the “curb-cut effect.”<sup>6</sup> Sidewalk ramps benefit far more people than those who use wheelchairs. People with strollers, heavy groceries, delivery dollies, skateboards, and rolling luggage all take advantage of curb cuts as well.<sup>7</sup> One recent study found that ninety percent of all “unencumbered” pedestrians at a shopping mall in Florida went a few steps out of their way in order to use a curb cut in lieu of making a step down.<sup>8</sup> Thus, a fundamental design change in the urban landscape that was thought to have limited application turns out to be one that works to the advantage of many. The original intention of creating curb cuts and similar accommodations was to make travel easier for people in wheelchairs, but all different types of people benefit from curb cuts.

The lesson from the curb cut’s history is that a change or system design intended to benefit one population may have positive externalities for others, as well. This Article applies that paradigm by linking two unexpectedly related areas: the twenty-

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1. Steven E. Brown, *The Curb Ramps of Kalamazoo: Discovering Our Unrecorded History*, 13 DISABILITY STUD. Q. 203, 205 (1999). The first of these allowed the many clients of Mr. Fischer who were themselves disabled veterans to travel in the downtown area without risking substantial injury. *Id.* The earliest federal law prohibiting discrimination against disabled individuals was the Architectural Barriers Act of 1968, but that applied only to federal buildings. Architectural Barriers Act of 1968, 42 U.S.C. §§ 4151 (2012).

2. Americans with Disabilities Act of 1990, 42 U.S.C. §§ 12101–209 (2012).

3. *See* 42 U.S.C. § 12112(a) (2012) (making law applicable to “covered entities”); § 12111(2) (defining “covered entity”); §§ 12112(b)(5), 12182–84 (prohibiting discrimination against individuals with disabilities in any place of public accommodation).

4. *See, e.g.*, Peter C. Bishop & Augustus J. Jones, Jr., *Implementing the Americans with Disabilities Act of 1990: Assessing the Variables of Success*, 53 PUB. ADMIN. REV. 121 (1993).

5. *Id.* at 124 (detailing Department of Transportation’s rejection of argument by local South Carolina bus company’s protest that accommodating disabled individuals would be too expensive).

6. Angela Glover Blackwell, *The Curb-Cut Effect*, 2017 STAN. SOC. INNOVATION REV. 28, 28, [https://ssir.org/articles/entry/the\\_curb\\_cut\\_effect](https://ssir.org/articles/entry/the_curb_cut_effect) [<https://perma.cc/5TX8-Z6T6>].

7. *See, e.g.*, Susan David deMaine, *From Disability to Usability in Online Instruction*, 106 LAW LIBR. J. 531, 546 (2014) (citing examples of some non-wheelchair users of curb cuts).

8. *See, e.g.*, Frank Greve, *Curb Ramps Liberate Americans with Disabilities—And Everyone Else*, IMPACT2020: NEWS (Jan. 31, 2007, 3:00 AM), <http://www.mcclatchydc.com/news/article24460762.html> [<https://perma.cc/W2UN-HHVJ>].

first century technology known as blockchain and the hidebound traditions governing the legal formalities for the execution of a last will and testament. Blockchain is the digital framework that undergirds a variety of new commodities and services, such as Bitcoin™ and other cryptocurrencies; proprietary banking, payment, and authentication systems;<sup>9</sup> the monitoring and delivery of electricity to consumers;<sup>10</sup> legal (and illegal) gambling;<sup>11</sup> and even a municipal pilot program to store records and identification documents for homeless people in a way that is accessible to medical and social services providers.<sup>12</sup> This Article argues that blockchain may be a solution to problems associated with will authentication. In connection with the recognition of digital signatures under the Uniform Electronic Wills Act (E-Wills Act), blockchain will easily qualify as wills under existing substantial compliance doctrine<sup>13</sup> or the harmless error doctrine of the Uniform Probate Code (UPC), also incorporated into the uniform act.<sup>14</sup>

Up until now, the law has addressed will authentication issues by clumsily (and inappropriately) departing from the policy reasons behind wills formalities. In conjunction with the E-Wills Act's embrace of new technologies,<sup>15</sup> blockchain wills can provide evidence that the purposes of wills formalities are met, or that the decedent signed the document with the intention that it serve as her will.<sup>16</sup> It is no understatement to say that blockchain also has the potential to transform all of legal practice. In identifying wills formalities as one specific (and largely undiscussed) area of law that would benefit immediately from the application of blockchain technology, this Article advances a nascent scholarly dialogue about how to harness

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9. See, e.g., *Ten Breakthrough Technologies 2018*, MIT TECH. REV. (Mar./Apr. 2018), [https://www.technologyreview.com/lists/technologies/2018/?\\_lrsc=abebec07-25ca-4ee3-87e0-ba1011ed66ca](https://www.technologyreview.com/lists/technologies/2018/?_lrsc=abebec07-25ca-4ee3-87e0-ba1011ed66ca) [<https://perma.cc/U2LH-ESYR>] (describing zero-knowledge proof cryptoprotocol developed by innovators at Zcash, a digital currency business and quoting another popular user of blockchain technology as calling the new cryptoprotocol “absolutely game-changing technology”).

10. See, e.g., Kimberly Henderson, Emily Knoll & Matt Rogers, *What Every Utility CEO Should Know About Blockchain*, MCKINSEY & CO. (Mar. 2018), <https://www.mckinsey.com/industries/electric-power-and-natural-gas/our-insights/what-every-utility-ceo-should-know-about-blockchain> [<https://perma.cc/YZ26-ZFKU>] (providing overview of multiple ways that utility industries may benefit from blockchain development).

11. See, e.g., Cointelegraph, *This Gambling Platform Forked its Own Blockchain to Beat the Competition*, THE NEXT WEB (Mar. 23, 2018), <https://thenextweb.com/money/2018/03/23/this-gambling-platform-forked-its-own-blockchain-to-beat-the-competition/> [<https://perma.cc/R82U-6EZF>] (“[T]he competition among blockchain gambling operators to create the most innovative experience is getting intense.”).

12. Danny Crichton, *Austin Is Piloting Blockchain to Improve Homeless Services*, TECH CRUNCH (Apr. 14, 2018, 1:27 PM), <https://techcrunch.com/2018/04/14/austin-is-piloting-blockchain-to-improve-homeless-services/> [<https://perma.cc/NFW3-8U8Y>] (explaining how blockchain technology will avoid confidentiality issues associated with paper records because of encryption of digital files and will facilitate access to complete social and medical histories of those without traditional formal identification).

13. See *infra* Section I.A.

14. See *infra* Section I.A.

15. See *infra* Section I.B.

16. See *infra* Part III.

the power of technology to make the law more responsive to the needs of twenty-first century legal actors and systems.<sup>17</sup>

Part I of this Article provides an overview of how the UPC has departed from the traditional rules that require a will to be in writing, signed by the testator, and have two witnesses (or a notary) that may (or may not) need to be present when the testator signs the document.<sup>18</sup> In recent years, testators have begun to use personal technology, like home computers, tablets, and handheld devices to make electronic wills without the involvement of attorneys.<sup>19</sup> Those documents have had mixed receptions in courts, but together the cases point to the need to modernize wills formalities to keep pace with the digital age. Traditionally, scholars justify wills formalities as serving multiple purposes (e.g., the evidentiary function; the channeling function; the cautionary (or ritual) function; and the protective function).<sup>20</sup> Given that many states have moved away from demanding strict compliance with traditional wills formalities, there is reason to question whether some (or any) of these formalities serve their stated purposes.<sup>21</sup> The departure from strict formalities suggests that the *authenticity* of a document as the decedent's will should be the court's primary concern when deciding whether to grant probate to a particular instrument.

Part II describes the E-Wills Act and the laws of four states that currently permit electronic wills.<sup>22</sup> Even in Nevada, a state that has allowed electronic wills since 2001, probate courts have very little experience with these instruments. By identifying deficiencies in both specific state legislation and the uniform law, this Part sets the stage for exploring how blockchain technology in particular can act as a bridge between the goal of making digital wills a reality, while also guaranteeing that an electronic document presented as a decedent's will is, in fact, *authentic*.

Part III explains the multiple ways that banks, clearinghouses, and other institutions, as well as private actors, rely on blockchain technology to conduct financial transactions.<sup>23</sup> Blockchain has unique anti-fraud features that would allow a testator to authenticate a particular document as his last will and testament. Through this discussion, it becomes clear in Part IV that blockchain technology could be the missing link that could make electronic wills truly effective.<sup>24</sup> Combined with the

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17. That conversation has already begun with a small number of scholarly articles contemplating the use of blockchain technology in the legal context; many of these articles are written by those who are not full-time U.S. faculty members. *See, e.g.*, Mark Fenwick, Wulf A. Kaal & Erik P.M. Vermeulen, *Legal Education in the Blockchain Revolution*, 20 *VAN. J. ENT. & TECH. L.* 352, 363 (2017) (article written by one U.S.-based legal scholar and two international scholars). The majority of articles speculating on the impact of blockchain on the legal field have been written for the popular press or published in bar journals or other practice-oriented venues. *See, e.g.*, Joe Dewey & Shawn Amuial, *Blockchain Technology Will Transform the Practice of Law*, *BIG L. BUS.* (June 25, 2015), <https://biglawbusiness.com/blockchain-technology-will-transform-the-practice-of-law/> [<https://perma.cc/3EPM-8YD5>].

18. *See infra* Section I.A.2.

19. *See infra* Section I.B.

20. *See infra* Section I.A.

21. *See infra* Section I.A.

22. *See infra* Part II.

23. *See infra* Part III.

24. *See infra* Part III.

best aspects of existing and uniform electronic wills legislation, blockchain has the potential to transform estate planning practice. Blockchain could both provide evidence surrounding the circumstances of a will's execution and authenticate a will—and indeed a full range of legal documents, such as waivers, ordinary contracts, deeds, or just about any instrument that requires a signature to be binding. Designed for an entirely different purpose, blockchain may be the solution to problems that its creators never knew existed.<sup>25</sup>

Part V argues that blockchain wills serve the purposes of wills formalities and provide a superior option for providing an *authentic* record of a decedent's last wishes for disposition of her property. The application of the harmless error rule exposes the relatively weak commitment to the policies allegedly served by requiring wills formalities in the first place. Blockchain can provide better evidence of the will's execution, the decedent's intention, the existence of witnesses, and digital signatures. This Article concludes with reflections on the way that blockchain wills might increase the availability of low-cost estate planning services for people of modest or limited means in the context of the larger access to justice movement.

## I. THE TREND AWAY FROM TRADITIONAL WILLS FORMALITIES

### A. *Uniform Lawmakers Eschew Traditional Formalities*

For hundreds of years, the execution of a will had to comply with certain formalities in order for the document to be recognized as the decedent's last will and testament.<sup>26</sup> Most states adopted will execution rules that closely followed the UK Statute of Frauds (1677)<sup>27</sup> and the Wills Act (1837).<sup>28</sup> Valid wills had to be in writing, signed at the end by the testator (or another individual who signed on behalf of the testator, at the testator's direction, and in the testator's conscious presence) and signed and attested by two witnesses, each of whom were present together and saw each other sign the document.<sup>29</sup>

In the twentieth century, the UPC relaxed these formalities by permitting the testator's acknowledgement of a written instrument as the testator's will before a notary or two witnesses, without those witnesses having to be present together.<sup>30</sup> Similarly, the UPC recognizes holographic wills, if the signature and "material portions" are in the decedent's handwriting.<sup>31</sup> Perhaps the most significant twentieth-century UPC innovation with respect to wills formalities is the adoption of the harmless error rule of UPC Section 2-503.<sup>32</sup> According to that rule, a document that neither follows the UPC's rules for execution (resulting in either a formally executed—also known as statutory—will or a holographic one), the document nevertheless is treated as legally valid and binding when the proponent of the

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25. *See supra* notes 1–12 and accompanying text.

26. *See, e.g.*, Wills Act, 7 Wm. 4 & Vict. c. 26 § 9 (1837) (Eng.).

27. An Act for Prevention of Fraud and Perjuries, 1677, 29 Car. 2, c. 3 (Eng.).

28. Wills Act, 7 Wm. 4 & Vict. (1837) (Eng.).

29. *Id.*

30. UNIF. PROB. CODE § 2-502(a) (1998) (amended 2013).

31. *Id.* § 2-502(b).

32. *Id.* § 2-503 (1990, rev. 1997).

document can establish by clear and convincing evidence that the decedent intended the document or writing to constitute the decedent's will, a partial or complete revocation of the will, an addition or alternation to the will, or a partial or complete revival of the decedent's formerly revoked will or portion of the will.<sup>33</sup>

The harmless error doctrine allows courts to forgive the absence of the requisite number of witnesses,<sup>34</sup> the complete absence of any witnesses,<sup>35</sup> and perhaps even the testator's signature itself.<sup>36</sup> Eleven states have adopted the UPC's harmless error doctrine; the Restatement (Third) of Property: Wills and Other Donative Transfers embraces it as well.<sup>37</sup>

If either or both of the absence of witnesses and the lack of a testator's signature can be forgiven under the harmless error doctrine,<sup>38</sup> the glaring question is whether a will must be in writing—or at least “writing” in a traditional sense—at all. Traditionally, wills are written by hand, on paper, or typed (in previous decades via a typewriter, and then later via a word processor and then printed on paper).<sup>39</sup> Over the last thirty years, preprinted will forms (now mostly in the form of Internet-based, do-it-yourself wills) have become common, and so it may be that a testator fills in only certain “blanks” on a paper by hand or by fillable computer form and then prints out the completed will on paper.<sup>40</sup> Yet the existence of a writing *on paper* is not necessary for a valid will. There are well-known cases of valid wills being written

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33. *Id.*

34. *See, e.g.*, Estate of Hall, 51 P.3d 1134, 1135 (Mont. 2002) (admitting will witnessed only by drafting attorney into probate).

35. *See, e.g.*, Estate of Waterloo, 250 P.3d 558 (Ariz. Ct. App. 2011) (holding that document dictated by hospital patient to rabbi and signed by patient was deemed to be patient's valid will although no individuals signed the document as witnesses, but witnesses filed court affidavits attesting to what they had seen or statements made to them by the testator).

36. *See, e.g.*, David Horton, *Wills Without Signatures*, 99 B.U.L. REV. 1623, 1656 (2019).

37. RESTATEMENT (THIRD) OF PROPERTY: WILLS AND OTHER DONATIVE TRANSFERS § 3.3(d) (AM. LAW INST. 2003).

38. *See* Horton, *supra* note 36.

39. There are many law firms that still follow the traditional practice of “tying” together the pages of a written or printed will with a red satin ribbon, possibly accompanied by a wax or foil seal that secures the ribbon to the document. *See, e.g.*, *How to Tie a Will*, INSTRUCTABLES LIVING (“[T]ying the Will is an extra security measure that prevents anyone from removing pages, or otherwise tampering with the finished Will.”), <http://www.instructables.com/id/How-To-Tie-A-Will/> [<https://perma.cc/5UPB-X65H>].

40. *See, e.g.*, Gerry W. Beyer, *Statutory Will Methodologies—Incorporated Forms vs. Fill-In Forms: Rivalry or Peaceful Coexistence?*, 94 DICK. L. REV. 231, 266 (1990) (describing early experience with state-sanctioned fill-in-the-blanks will forms).



on a tractor bumper,<sup>41</sup> paper plates,<sup>42</sup> and even walls.<sup>43</sup> These cases in turn invite the question of whether wills have to be written in three-dimensional space, or whether digital wills might qualify as “writings” for purposes of applicable state statutes.

### *B. Everyday Testators Depart from Traditional Formalities*

As long as there have been legal instruments known wills, there have been questions about which, if any, document qualifies as a decedent’s will.<sup>44</sup> These questions are especially salient when the traditional wills formalities are not met: there may be no traditional document or writing, the document may not be signed in a traditional manner, or the writing may not be signed at all.<sup>45</sup> Six recent cases discussed in this Section involve some sort of electronic instrument that gave rise to questions about whether that instrument was the decedent’s will. These cases focus attention on the fact that testators are adapting twenty-first century technology to engage in the centuries-old process of memorializing one’s wishes for the post-mortem disposition of property. That twenty-first century instruments do not comply with formalities developed in a different era is perhaps unsurprising; these cases point to the need to modernize wills formalities to account for the widespread availability and convenience of electronic will-making.

#### 1. Cursive Font as a Signature

Like many people, Steve Godfrey prepared his own will on his home computer.<sup>46</sup> He invited two neighbors to come to his home, and in their presence, Godfrey typed

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41. *E.g.*, Bre McAdam, *Will Written on Tractor 65 Years Ago Celebrated by Saskatchewan Law College*, STAR (Oct. 26, 2013), [https://www.thestar.com/news/canada/2013/10/26/will\\_written\\_on\\_tractor\\_65\\_years\\_ago\\_celebrated\\_by\\_saskatchewan\\_law\\_college.html](https://www.thestar.com/news/canada/2013/10/26/will_written_on_tractor_65_years_ago_celebrated_by_saskatchewan_law_college.html) [<https://perma.cc/F9QQ-73ME>] (discussing the case of *Harris Estate* in which a Surrogate Court in Saskatchewan, Canada, permitted probate of tractor bumper on which farmer had carved, “In case I die in this mess, all to the wife,” while pinned under the immovable machine for over twelve hours, losing significant blood, and suffering multiple leg fractures). For more complete details of the case, see, *e.g.*, Geoff Ellwand, *An Analysis of Canada’s Most Famous Holograph Will: How a Saskatchewan Farmer Scratched His Way into Legal History*, 77 SASK. L. REV. 1, 2 (2014) (providing multiple colorful details).

42. The Associated Press, *Killer Wrote Will on Paper Plates*, DENVER POST (Sept. 13, 2007, 10:34 AM) (describing writing left by military veteran and Wyoming resident David M. Munis on cardboard box and multiple paper plates), <https://www.denverpost.com/2007/09/13/killer-wrote-will-on-paper-plates/> [<https://perma.cc/3U7X-TQL9>].

43. *See* JAN M. SMITS, *ADVANCED INTRODUCTION TO PRIVATE LAW 109* (2016) (reporting that Guinness Book of World Records has certified as the shortest will on record a Czech will in which a man wrote on his bedroom wall “*Vše zene*” (“everything to wife”).

44. *See, e.g.*, Reid K. Weisbord & David Horton, *Inheritance Forgery*, 69 DUKE L.J 855 (2020) (describing anti-forgery laws in ancient Rome designed to criminalize the creation of fake wills), [https://papers.ssrn.com/abstract\\_id=3330822](https://papers.ssrn.com/abstract_id=3330822) [<https://perma.cc/8ZS8-PL8Z>].

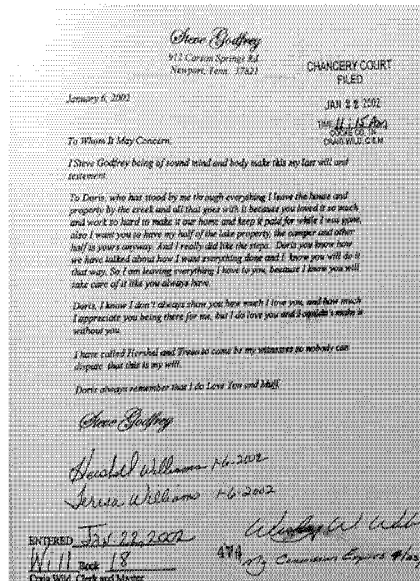
45. *See supra* Section I.A.

46. *Taylor v. Holt*, 134 S.W. 3d 830, 830 (Tenn. Ct. App. 2003).

his name in a cursive font at the end of the document.<sup>47</sup> He then printed the document out, and the neighbors signed as witnesses and dated their signatures.<sup>48</sup> One week later, Godfrey died.

The sole beneficiary of Godfrey's will was his girlfriend, Doris Holt.<sup>49</sup> Holt presented for probate as Godfrey's last will and testament the document with Godfrey's name typed in a cursive font and witnessed by the neighbors.<sup>50</sup> Holt also presented the neighbors' affidavits attesting to the circumstances of the will's execution.<sup>51</sup> Godfrey's sister, his sole intestate heir, contested the probate of the document offered by Holt.<sup>52</sup> Holt successful motioned for summary judgment on the grounds that the document complied with all applicable Tennessee laws concerning the execution and witnessing of a will.<sup>53</sup>

Figure 1: Last Will and Testament of Steven Godfrey with Cursive Signature



On appeal, Godfrey's sister argued that Godfrey's typed "signature," even if in cursive font, did not constitute a signature on the will.<sup>54</sup> The Court of Appeals of Tennessee noted that the statute specifically defined "signature" to include "a mark,

47. *Id.*

48. *Id.* at 830–31.

49. *Id.* at 830.

50. *Id.* at 831.

51. *Id.*

52. *Id.*

53. *Id.*

54. *Id.* The sister also argued that the disposition to Holt was invalid because the will referred to Holt by her first name only. As to this issue, the appellate court stated that it was irrelevant to the determination of whether the will was validly executed and witnessed in accordance with state law. *Id.* at 834.

the name written near the mark and witnessed, or any other symbol or methodology executed or adopted by a party with intention to authenticate a writing or record, regardless of being witnessed.”<sup>55</sup> In this case, the court said that Godfrey intended the typed name in cursive font to be his signature and thus, it qualified as “any other symbol or methodology . . . adopted by a party with intention to authenticate a document.”<sup>56</sup> The court noted that Godfrey had typed his name in cursive font in the presence of two witnesses, and thus, he “simply used a computer rather than an ink pen as the tool to make his signature.”<sup>57</sup> The appellate court affirmed the trial court’s grant of summary judgment to Holt, finding that the will was executed in accordance with the statutory formalities.<sup>58</sup> It is not clear whether the court would have reached the same conclusion had there not been testimony of the witnesses who saw Godfrey “sign” his will in this manner, although one assumes that such testimony increased the court’s confidence that Godfrey intended to sign this document and that he intended it to be his will.

## 2. The Samsung Galaxy Will

Consider also the case of Javier Castro, who went to a hospital in Lorain, Ohio, and was told that he needed a life-saving blood transfusion.<sup>59</sup> For religious reasons, Castro declined to receive the blood transfusion.<sup>60</sup> Later that month, after consulting with his brothers, Castro decided to prepare a will.<sup>61</sup> Because there were no pens, pencils or paper readily available, Castro’s brother Miguel instead took up the Samsung Galaxy tablet computer belonging to Castro’s brother Albie.<sup>62</sup> Javier dictated to Miguel what Javier wanted the will to say; Miguel “wrote” Javier’s wishes on the tablet using a stylus.<sup>63</sup> Thus, Miguel produced a stored digital image of what would have been created had he been writing with a traditional implement on a piece of paper. Miguel and Albie each testified that all parts of the document were read to Javier.<sup>64</sup> Before Javier could sign the document, he was transported back to the hospital.<sup>65</sup> In the hospital, Javier later used the stylus to sign the tablet in the presence of Miguel and Albie.<sup>66</sup> Javier’s nephew, Oscar DeLeon, subsequently arrived at the hospital and Javier acknowledged his signature on the will on the tablet.<sup>67</sup> Oscar signed the tablet as a witness.<sup>68</sup> Three other individuals also testified that Javier told

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55. *Id.* at 833 (citing TENN. CODE. ANN. § 1-2-105(27) (1999)).

56. *Id.*

57. *Id.*

58. *Id.* at 833–34.

59. *In re Estate of Castro*, No. 2013ES00140, at 1 (Ohio Ct. Com. Pl. June 19, 2013).

60. *Id.*

61. *Id.*

62. *Id.* at 1–2.

63. *Id.* at 2.

64. *Id.*

65. *Id.*

66. *Id.*

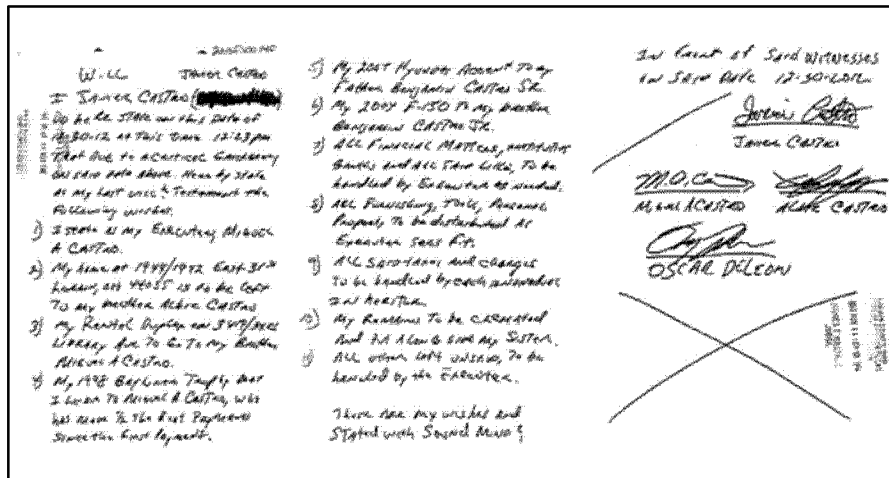
67. *Id.*

68. *Id.*

them that he had signed the will on the tablet and that the writing on the tablet reflected his wishes.<sup>69</sup> Javier died one month after he signed the tablet.<sup>70</sup>

Approximately two weeks after Javier's death, Miguel Castro presented for probate a paper copy printout from the Galaxy tablet.<sup>71</sup> There was testimony that the tablet was password protected, the document had been unaltered since the date Javier signed it, and the tablet had been in Albie's continuous possession since Javier's death.<sup>72</sup> Miguel and Albie testified that the paper printout was a duplicate of the document on the tablet purporting to be Javier's will.<sup>73</sup>

Figure 2: Last Will and Testament of Javier Castro Written on Samsung Galaxy Tablet



The Court of Common Pleas, Probate Division, of Lorain County, Ohio, framed the case as raising three issues: whether the decedent had committed his instructions to “writing,” whether the decedent “signed” the will, and whether there was sufficient evidence that the document presented was the decedent’s last will and testament.<sup>74</sup> The court observed that Ohio law requires wills to be in writing,<sup>75</sup> and that another provision of Ohio law, not directly applicable to wills, includes in the meaning of “writing” any “computer software . . . or [any] other thing having in or upon it any written, typewritten, or printed matter” in its definition of “writing.”<sup>76</sup> Therefore, in the court’s view, the decedent had committed his wishes to writing. Citing the same definition of “writing,” the court ruled that the decedent’s handwritten signature

69. *Id.* at 3.

70. *Id.*

71. *Id.*

72. *Id.* at 2.

73. *Id.*

74. *Id.* at 4.

75. *Id.* (citing OHIO REV. CODE ANN. § 2107.03 (LexisNexis 2016)) (requiring wills other than oral wills to be in writing).

76. *Id.* at 4–5 (quoting OH. REV. CODE ANN. § 2913.01(F) (LexisNexis 2014)).

stored on the tablet was a “graphical image of Javier’s signature,” and thus constituted as his “signature” for purposes of the will execution statute.<sup>77</sup> The will was not formally “attested” by the witnesses (in the sense that there was no attestation clause), as required by Ohio law, but it was signed by witnesses and confirmed by testimony of others that the decedent intended the contents of the tablet to constitute as his will.<sup>78</sup> For those reasons, under Ohio’s version of the harmless error statute the court found that the writing on the Samsung Galaxy tablet constituted the last will and testament of Javier Castro, thus resolving the final issue.<sup>79</sup>

The court admitted to probate the printout from the Samsung Galaxy tablet.<sup>80</sup> Neither the decedent’s father nor his mother, who would have been his heirs had he died intestate, objected to the probate of the Galaxy tablet will.<sup>81</sup> It is possible that if the family had not been in agreement about the distribution of the estate, the court might have been less likely to admit the tablet will to probate. This is, of course, only a speculation.

### 3. The Unsigned LegalZoom Will

In 2013, the intended beneficiary of an unsigned will unsuccessfully argued for the document’s admission to probate as the decedent’s will. Carole Berger, a Yale employee, had been friends for over ten years with two other Yale employees, Lawrence Litevich and Jeanette Sullivan.<sup>82</sup> Berger was unmarried, had no siblings or children, and conducted a limited social life.<sup>83</sup> Using the online platform LegalZoom, Berger prepared a will leaving her estate in equal shares to Sullivan and Litevich.<sup>84</sup> She previously had named both Sullivan and Litevich as beneficiaries of several of her nonprobate assets, including life insurance policies and retirement accounts having a value of approximately \$840,000.<sup>85</sup>

In the course of preparing the document on the LegalZoom platform, Berger input her social security number and a variety of other personal information, including her credit card number, for payment purposes.<sup>86</sup> Litevich, one of the intended beneficiaries and the plaintiff in this case, claimed that Berger’s LegalZoom account “likely” required a password and that the program required her to confirm each of the documents after they were “drafted” by the computer system but before the

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77. *Id.* at 5.

78. *Id.* at 5–6.

79. *Id.*

80. *Id.*

81. *Id.* at 3–4. Indeed, counsel who appeared on behalf of the decedent’s parents stated that if the tablet will was deemed invalid, and thus Javier Castro was treated as dying intestate, the parents would have distributed the property in accordance with the provisions of the tablet. *Id.*

82. *Litevich v. Prob. Court*, No. NNHCV126031579S, 2013 WL 2945055, at \*1 (Conn. Super. Ct. May 17, 2013).

83. *Id.*

84. *Id.*

85. *Id.* at \*3.

86. *Id.* at \*2.

company printed and sent them to the client.<sup>87</sup> In reality, Berger fell ill and was admitted to the hospital before she received the LegalZoom document in the mail.<sup>88</sup> Although Sullivan retrieved the will from Berger's home, Berger did not execute the document before she fell into a state of mental incapacity and died three days later in the hospital.<sup>89</sup>

Sullivan and Litevich presented the unexecuted LegalZoom document for probate. The charitable beneficiary of Berger's will executed in 1991 presented that 1991 document for probate. Litevich argued that although Berger did not sign the LegalZoom will in a traditional sense, LegalZoom's required Internet confirmation of the documents was tantamount to the decedent's signature.<sup>90</sup> When the court denied probate of the LegalZoom will, Litevich sued alleging, among other things, that the court should admit the LegalZoom will to probate because failure to recognize the unsigned will violated his constitutional rights or, alternatively, because Connecticut should adopt the harmless error rule of the UPC. Ordinarily, to be valid under Connecticut law, a will must be in writing, subscribed by the testator, and subscribed by two witnesses who each attest while in the presence of the testator.<sup>91</sup> Connecticut is a strict compliance jurisdiction that does not forgive failure to comply with the necessary formalities.<sup>92</sup>

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87. *Id.*

88. *Id.*

89. *Id.*

90. *Id.*

91. CONN. GEN. STAT. ANN. § 45a-251 (West 2014).

92. *Litevich*, 2013 WL 2945055, at \*10 (indicating that the ability to transmit property at death is a positive right granted by statute (quoting *Hatheway v. Smith*, 65 A. 1058, 1060 (Conn. 1907))).

Figure 3: LegalZoom Pricing Packages

**Last Will and Testament Pricing** [Get Started](#)

LegalZoom's Will packages are backed by a 100% Satisfaction Guarantee and unlimited customer support. [Start now](#) and choose your package at checkout.

Standard	Gold	Premium
<p><b>Regular Price: \$89.00</b> <b>Special Price: \$69.00</b></p> <ul style="list-style-type: none"> <li>• A comprehensive, customized Last Will and Testament</li> <li>• <b>Peace of Mind Review</b></li> <li>• Advanced provisions, such as Credit Shelter Trusts, to protect every member of your household</li> <li>• Free revisions for 30 days</li> <li>• Printed on archival paper</li> </ul> <p><a href="#">More details</a></p>	<p><b>Regular Price: \$149.00</b> <b>Special Price: \$99.00</b></p> <ul style="list-style-type: none"> <li>• A comprehensive, customized Last Will and Testament</li> <li>• <b>Free unlimited revisions for 1 Year</b></li> <li>• <b>Peace of Mind Review</b></li> <li>• Advanced provisions, such as Credit Shelter Trusts, to protect every member of your household</li> <li>• Printed on archival paper</li> </ul> <p><a href="#">More details</a></p>	<p><b>Regular Price: \$199.00</b> <b>Special Price: \$119.00</b></p> <ul style="list-style-type: none"> <li>• A comprehensive, customized Last Will and Testament</li> <li>• <b>Free unlimited revisions for 1 Year</b></li> <li>• <b>Peace of Mind Review</b></li> <li>• Advanced provisions, such as Credit Shelter Trusts, to protect every member of your household</li> <li>• Printed on archival paper</li> <li>• <b>Same-Day Preparation</b></li> <li>• <b>Express E-mail Delivery</b></li> </ul> <p><a href="#">More details</a></p>

The court rejected both of Litevich's claims, acknowledging that Connecticut law distinguished between those testators who follow the statutory requirements for the execution of wills and those who do not,<sup>93</sup> but observing that similarly situated testators receive the same treatment.<sup>94</sup> Even if the court had found that the law governing wills formalities treats similarly situated individuals differently, the court reasoned that such classification would survive rational basis review.<sup>95</sup> The state has an interest in making sure that wills adequately represent the intentions of testators, and so a statutory distinction between those who do (or do not) follow the wills formalities would not be arbitrary or irrational.<sup>96</sup> In rejecting the plaintiff's arguments that Connecticut should adopt the harmless error rule, essentially "forgiving" the lack of a traditional signature in this case, the court said it was not free to deviate from unambiguous statutory language.<sup>97</sup> Even if the court were inclined to permit probate in cases of nonconforming wills, it noted in dicta that statutory change was a legislative matter.<sup>98</sup> And further, even if the court were inclined to put a "judicial gloss" on the statute (which it was not willing to do, despite the plaintiff's arguments), the lack of a traditional signature on a document is an error that is the most difficult to excuse.<sup>99</sup> The court therefore denied probate of the unsigned LegalZoom will and allowed the charitable beneficiary to proceed with probate of the decedent's 1991 will.<sup>100</sup>

93. *Id.* at \*11.

94. *Id.* at \*13.

95. *Id.* at \*15.

96. *Id.* at \*14.

97. *Id.* at \*22.

98. *Id.* at \*20.

99. *Id.* at \*22.

100. *Id.* at \*23.

#### 4. The Suicide Note

Duane Francis Horton II, age twenty-one, was a troubled, young man who kept a journal.<sup>101</sup> In an undated entry written entirely in his own handwriting, Horton wrote, “I am truly sorry about this . . . My final note, my farewell is on my phone. The app should be open. If not look on evernote, ‘Last Note[.]’”<sup>102</sup> Horton also provided the e-mail address and password he used to access the document storage site Evernote.<sup>103</sup>

The Evernote file on Horton’s phone contained a typed series of electronic personal messages and funeral instructions, as well as specific instructions regarding the disposition of his property:

Have my uncle go through my stuff, pick out the stuff that belonged to my dad and/or grandma, and take it. If there is something he doesn’t want, feel free to keep it and do with it what you will. My guns (aside from the shotgun that belonged to my dad) are your’s to do with what you will. Make sure my car goes to Jody if at all possible. If at all possible, make sure that my trust fund goes to my half-sister Shella, and only her. Not my mother. All of my other stuff is you’re do whatever you want with. I do ask that anything you well, you give 10% of the money to the church, 50% to my sister Shella, and the remaining 40% is your’s to do whatever you want with.<sup>104</sup>

The typed words existed entirely in electronic form (not on paper) and included Horton’s full name at the end of the file, arguably functioning as a signature (although not in the cursive font used by the testator in the *Taylor* case).<sup>105</sup>

During his lifetime, Horton had been the subject of a court-imposed conservatorship, with a company known as Guardianship & Alternatives, Inc. acting as his conservator.<sup>106</sup> This Michigan company self-advertises as “[c]aring for at risk adults in Southwest Michigan.”<sup>107</sup> In December 2015, after Horton committed suicide, Guardianship & Alternatives, Inc. presented the Evernote file for probate as the decedent’s will and requested that the company be appointed as personal representative of Horton’s estate.<sup>108</sup> Horton’s mother filed a competing claim for appointment as personal representative of her son’s estate, and claimed that he died intestate. In other words, Horton’s mother argued that the Evernote file was not her son’s last will and testament.<sup>109</sup>

The Court of Appeals of Michigan acknowledged that the Evernote file did not meet Michigan’s requirements for a statutory will,<sup>110</sup> but affirmed the probate court’s

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101. *In re Estate of Horton*, 925 N.W.2d 207, 209 (Mich. Ct. App. 2018).

102. *Id.* (alteration in original).

103. *Id.*

104. *Id.*

105. *See supra* Section I.B.1.

106. *Horton*, 925 N.W.2d at 209.

107. GUARDIANSHIP & ALTERNATIVES, INC., <http://www.guardianshipandalternatives.com> [<https://perma.cc/5XZX-W79T>].

108. *Horton*, 925 N.W.2d at 209.

109. *Id.*

110. *Id.* at 212; *see* MICH. COMP. LAWS ANN. § 700.2502(1) (West 2018) (specifying



finding. In reaching its holding that the Evernote file was Horton's last will and testament,<sup>111</sup> the appellate court noted that Michigan law permits the probate of otherwise nonconforming documents (including holographic wills) if there is clear and convincing evidence that the decedent intended the document to be his will.<sup>112</sup> The court of appeals considered Horton's handwritten entry in his diary, the Evernote file, extrinsic evidence of Horton's relationship with his mother, the circumstances of his death, and the discovery of the suicide note.<sup>113</sup> The court emphasized that Horton clearly had written instructions in his diary to facilitate access to the Evernote file, and affirmed the probate court's determination that Horton "clearly and unambiguously expressed his testamentary intent in the electronic document in anticipation of his impending death."<sup>114</sup> The dispositive provisions immediately followed Horton's expression of his religious views, parting words to certain loved ones, apologies for his suicide, and instructions for his funeral.<sup>115</sup> He had a strained relationship with his mother and made no provision in the Evernote file for any property to pass to her.<sup>116</sup> Horton seemed to have written the diary entry, left at home the diary and the phone containing the Evernote file, and then promptly departed to kill himself.<sup>117</sup> For those reasons, the Michigan Court of Appeals held the probate court did not err in finding that the Evernote file constituted a valid will for purposes of Michigan law.<sup>118</sup>

#### 5. The Australian iPhone Note with Typed Name at End

Cases involving electronic testamentary documents are not unique to the United States. Karter Yu was living in Queensland, Australia, when he opened the Notes feature on his iPhone and typed the words, "This is the last Will and Testament" and other language appointing his brother as executor and leaving property to certain friends and family members.<sup>119</sup> Yu specifically instructed that any "rough list on my PC" be disregarded and detailed that "I have not modified anything after 6:48pm of 31 august 2011!"<sup>120</sup> He then typed his name, the date, and his address.<sup>121</sup>

Under Queensland law, if a document does not comply with the statutory formalities, it can be admitted to probate if the court is satisfied that the decedent

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formalities required to execute a valid will). It is not clear whether the court considered the Evernote file to be a "writing," but in any event it was not signed by Horton or by two witnesses. *See Horton*, 925 N.W.2d at 212.

111. *Horton*, 925 N.W.2d at 215.

112. *Id.* at 211; *see* § 700.2502(2) (permitting probate of wills if the testator's "signature" and the document's "material portions" are in the testator's handwriting); § 700.2503 (echoing the UPC's harmless error rule).

113. *See Horton*, 925 N.W.2d at 214.

114. *Id.* at 213.

115. *Id.* at 214.

116. *Id.* at 215.

117. *Id.* at 214.

118. *Id.* at 215.

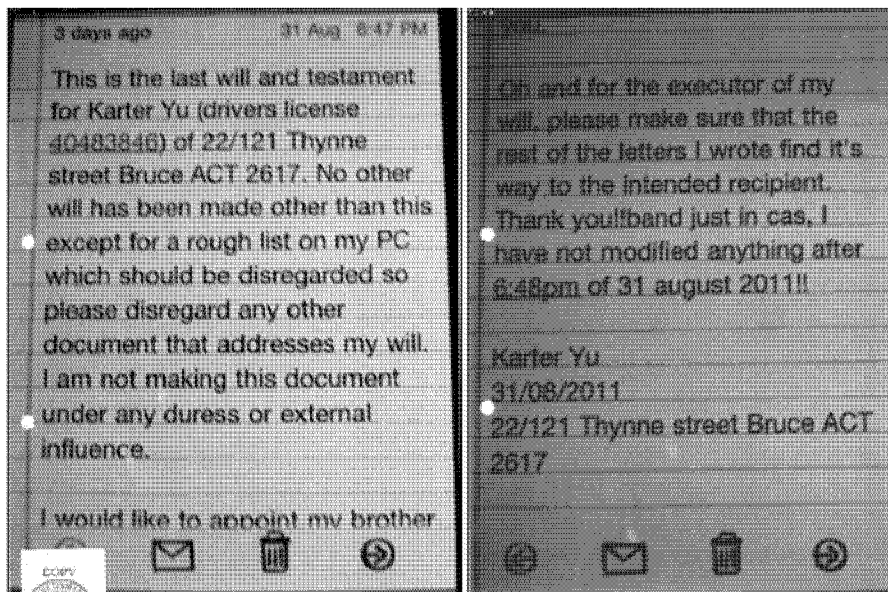
119. *In Re Yu* [2013] QSC 322, ¶ 9 (Austl.).

120. *See infra* Figure 4.

121. *Yu* [2013] QSC 322, ¶ 9.

intended the document stating his testamentary intentions to be his will.<sup>122</sup> The court admitted the iPhone Note to probate as Yu's last will and testament, finding that three tests were satisfied: (a) it was a document; (b) the document stated the decedent's testamentary intent; and (c) the decedent intended the document to be his will.<sup>123</sup> Under Queensland law, a "document" includes any material from which writings are capable of being produced, including electronic devices.<sup>124</sup> Thus, the iPhone Note clearly was a document.<sup>125</sup> In the iPhone Note, Yu nominated an executor and disposed of all of his property. Ordinarily, the court noted, "a person does not attempt to dispose of the whole of the person's property except upon the person's death," and so plainly the document stated Yu's testamentary intent.<sup>126</sup> The court also found that in writing the words, "This is the last Will and Testament," Yu manifested a clear intention for the iPhone Note to operate legally as his will.<sup>127</sup>

Figure 4: Pages from Last Will and Testament of Karter Yu



The court made no mention of the lack of traditional signatures on the part of the testator or witnesses (and there is nothing in the record to suggest there were any witnesses).<sup>128</sup> Instead, the Queensland court disposed of the case in ten relatively

122. *Succession Act* 1981 (Qld) ss 10, 18 (setting forth statutory formalities and permitting deviation from formalities when the court is satisfied that documented testamentary instructions intended to be the decedent's will).

123. *Yu* [2013] QSC 322, ¶¶ 4, 6, 8.

124. *Acts Interpretation Act* 1954 (Qld) sch 1 s 36 (defining "document").

125. *Yu* [2013] QSC 322, ¶ 5.

126. *Id.* ¶ 7.

127. *Id.* ¶ 9.

128. *See id.* (making no mention of lack of traditional signature by decedent or witnesses, or the absence of witnesses).

short paragraphs, admitting the iPhone Note to probate as the decedent's will, as if there were nothing unusual about the situation.<sup>129</sup>

#### 6. The Australian Unsent Text Message

Unlike the *Yu* case, a different Australian case generated significant controversy.<sup>130</sup> Mark Nichol had been married to his wife, Julie Nichol, for approximately one year; they had been a couple for over two years prior to their marriage.<sup>131</sup> By all accounts, the couple had a tempestuous relationship; Julie had left Mark twice before, and then moved out of the marital home two days before Mark's death.<sup>132</sup> At times in the past when they were not living together as a couple, Julie took Mark to his mental health apartments and they participated in activities together.<sup>133</sup>

Some time prior to October 11, 2016, Mark composed a text message on his phone but did not send it.<sup>134</sup> The message read:

Dave Nic you and Jack keep all that I have house and superannuation,  
put my ashes in the back garden with Trish Julie will take her stuff only  
she's ok gone back to her ex AGAIN I'm beaten . A bit of cash behind  
TV and a bit in the bank Cash card pin 3636

MRN190162Q  
10/10/2016  
My will[.]<sup>135</sup>

It was undisputed in court that "Dave Nic" is Mark's brother David Nichol,<sup>136</sup> the letters "MRN" are Mark Nichol's initials, and the numbers "190162" match Mark's birth date of January 19, 1962.<sup>137</sup> The text's mention of "Trish" likely is a reference to Mark's first wife, Patricia, who had predeceased him.<sup>138</sup>

Mark Nichol committed suicide.<sup>139</sup> On October 10, 2016, Julie found Mark's body in the shed located in the yard of the home they had shared.<sup>140</sup> Mark's phone was near his dead body.<sup>141</sup> On October 11, 2016, Julie asked a friend to look through the

129. *Id.*

130. *See, e.g.*, Chris Perez, *Weird but True*, N.Y. POST, Oct. 12, 2017, at 122 (describing decision of Australian court).

131. *See In re Nichol* [2017] QSC 220, ¶ 2 (Austl.).

132. *Id.*

133. *Id.*

134. *Id.* ¶ 12.

135. *Id.* ¶ 13.

136. *Id.* ¶ 15 ("There is no dispute that the text message was addressed to the deceased's brother, David Nichol, whose contact details were stored in the deceased's mobile phone under the abbreviated name 'Dave Nic.'").

137. *Id.* ¶ 14.

138. *See id.* ¶ 22.

139. *Id.* ¶ 3.

140. *Id.* ¶ 12.

141. *Id.*

contacts on Mark's phone for purposes of contacting others about Mark's death.<sup>142</sup> That friend found the unsent text message, then Julie gave Mark's brother, Bradley Nichol, and Mark's nephew, Jack Nichol, access to the phone in order to take a screenshot of the unsent text message, which they did.<sup>143</sup>

Julie brought a proceeding to have Mark Nichol declared intestate.<sup>144</sup> If Mark were intestate, his estate would be shared equally by Julie and Anthony, Mark's son from a prior relationship.<sup>145</sup> The decedent's brother David Nichol and nephew Jack Nichol brought a proceeding seeking to have the unsent text message treated as Mark's last will and testament.<sup>146</sup>

Julie acknowledged that the text was testamentary in nature, but argued that the court could not be satisfied that Mark intended the text message, acting alone, to function as his will, in light of the fact that it was unsent.<sup>147</sup> She also raised questions about his mental capacity to make a will.<sup>148</sup> David Nichol and Jack Nichol argued that Mark likely did not send the text message because he did not want his suicidal plans and actions to be interrupted.<sup>149</sup> They also claimed that even though Mark had a history of depression and at least one prior suicide attempt, there was insufficient evidence that the decedent lacked testamentary capacity.<sup>150</sup> The court noted, in fact, that Julie presented no medical evidence whatsoever to suggest that Mark lacked mental capacity at the time he composed the text message.<sup>151</sup>

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142. *Id.*

143. *Id.*

144. *Id.* ¶¶ 1–2.

145. *Id.* ¶ 27 (describing disposition of estate in event of intestacy).

146. *Id.* ¶ 1.

147. *Id.* ¶ 16.

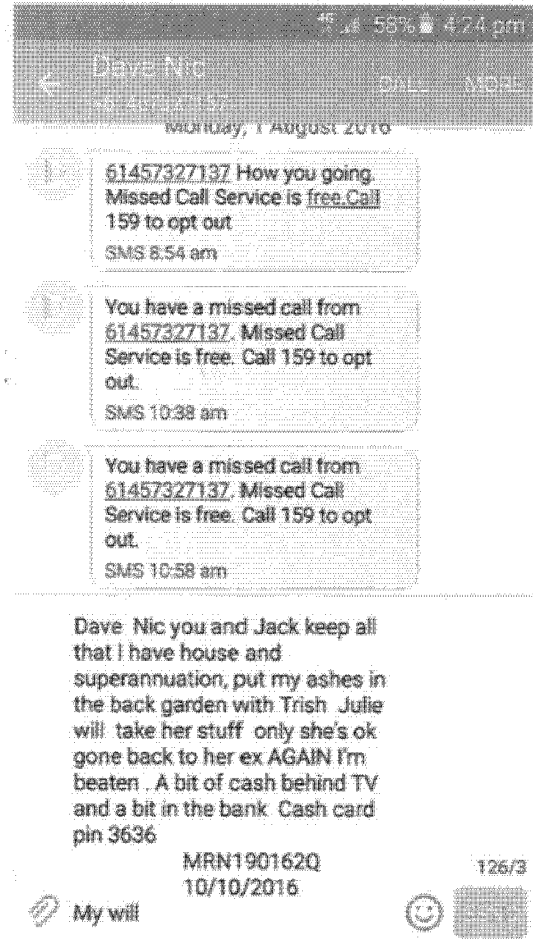
148. *Id.*

149. *Id.* ¶ 20.

150. *Id.* ¶ 21.

151. *Id.* ¶ 36.

Figure 5: Unsent Text Message of Mark Nichol



The court ruled in favor of the decedent's brother and nephew, admitting the unsent text to probate as Mark Nichol's will.<sup>152</sup> In reaching that conclusion, the court found that (a) the text message was a document,<sup>153</sup> (b) the document stated the decedent's testamentary intent,<sup>154</sup> and (c) the decedent intended the document to be his will.<sup>155</sup> In describing the text as containing testamentary intentions, the court

152. *Id.* ¶ 60 (“The text message addressed the disposition of his assets . . . and was specifically identified as his will. The terms of the text message reflect that the deceased wished the document to be his final will and was not merely an emotional expression of wishes.”); *id.* ¶ 72 (admitting unsent text message to probate as the decedent's will).

153. *Id.* ¶ 40 (citing a broad definition of “document”).

154. *Id.* ¶ 60.

155. *Id.*

referred to the decedent's use of the phrase "my will," his identification of his assets, providing the personal identification number for his bank account, and giving specific instructions for the disposition of his ashes.<sup>156</sup> The court interpreted the terms of the text itself, including the language "my will," as evidence that the decedent understood the importance of his actions.<sup>157</sup> Although Mark previously had shown signs of being "down" and was receiving counseling, the court noted that, "No-one including [Julie Nichol] describes the deceased as acting erratically, irrationally or being so afflicted by depression that it was affecting his ability to think or function."<sup>158</sup> That Mark Nichol suffered from depression or had previously attempted to kill himself did not mean he lacked the capacity to make a will.<sup>159</sup> The unsent text message was admitted to probate as the decedent's will.<sup>160</sup>

### C. Moving Toward Electronic Wills

The law is moving (and must continue to move) in the direction of recognizing wills that are "written" in electronic form only.<sup>161</sup> Companies like Legalzoom and Bequest, Inc. lobby actively in favor of such legislation, because of the potential lucrative market in fees for acting as "digital custodian" of the documents.<sup>162</sup> Four jurisdictions—Nevada, Arizona, Indiana, and Florida—have enacted laws that specifically recognize electronic wills.<sup>163</sup> In three of those jurisdictions—Nevada, Arizona, and Florida—an electronic will can be made self-proving if a "qualified custodian" (typically, but not necessarily, a commercial entity) stores the document until the time of the decedent's death.<sup>164</sup>

The next Part considers the E-Wills Act, approved in July 2019 by the National Conference of Commissioners on Uniform State Laws.<sup>165</sup> The E-Wills Act is an ambitious undertaking and sets the stage for many more states to modernize their laws to recognize electronic wills. The next Part explores how the E-Wills Act squares with, or calls into question, the traditional purposes of wills formalities. By departing from conventional platitudes about the cautionary, ritual, protective, and channeling functions of wills, it is possible to articulate a more nuanced understanding of the substantive goals served by wills formalities and, through that

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156. *Id.* ¶ 43.

157. *Id.* ¶ 53.

158. *Id.* ¶ 52.

159. *Id.* ¶ 48.

160. *Id.* ¶ 60.

161. *See supra* Section I.B.

162. *See Horton, supra* note 36, at 30 n.248.

163. *See* ARIZ. REV. STAT. ANN. §§ 14-2516 to 14-2523 (effective July 1, 2019) (containing the first electronic wills act in the country, enacted in 2011); FLA. STAT. §§ 732.521-526 (effective Jan. 1, 2020) (2019 Fla. Laws 41) (same); IND. CODE §§ 29-1-21-1 to 29-1-21-18 (effective July 1, 2018) (recognizing electronic wills); NEV. REV. STAT. § 133.085 (2017) (same).

164. *See* ARIZ. REV. STAT. ANN. § 14-2519 (2019) (containing provisions for an electronic will to be self-proving if maintained by a qualified custodian); FLA. STAT. §§ 732.503, 523 (effective Jan. 1, 2020) (2019 Fla. Laws 37) (same); NEV. REV. STAT. § 133.086 (2017) (same).

165. *See infra* Section II.A.

lens, evaluate the strengths and weaknesses of the model law. The Article then goes on to ask whether emerging technology—namely blockchain—offers an even better solution to some of the challenges that the E-Wills Act attempts to address.

## II. ELECTRONIC WILLS ACTS

### A. Overview

In 2017, the Uniform Law Commission (ULC) took the unusual step of assembling a drafting committee for an Electronic Wills Act.<sup>166</sup> Typically, the ULC appoints a Study Committee to research a topic and recommend whether or not to proceed with drafting a uniform law.<sup>167</sup> But with the E-Wills Act, the ULC assembled a drafting committee immediately, and its three leaders prepared an “issues memo” in October 2017 to guide the work of a nascent committee.<sup>168</sup> The ULC approved a final version of the E-Wills Act in July 2019.<sup>169</sup> The law’s goals are: to (1) “allow a testator to execute a will electronically, while maintaining the protections for the testator that traditional wills law provides for wills executed on something tangible (usually paper);” (2) “create execution requirements that, if followed, will result in a valid will without a court hearing to determine validity, if no one contests the will;” and (3) “develop a process that would not enshrine a particular business model in the statutes.”<sup>170</sup> The drafting committee had expressed concerns about specific commercial vendors lobbying for e-will legislation in several states and sought to draft legislation guided by the public interest, not corporate interests.<sup>171</sup>

The E-Wills Act seeks to facilitate a testator’s electronic execution of a will, while also providing customary safeguards against fraud, undue influence, and the like.<sup>172</sup> The E-Wills Act drafters drew on the experiences of Nevada, which has permitted

166. REAL PROPERTY, PROBATE AND TRUST LAW SECTION OF THE FLORIDA BAR, WHITE PAPER ON PROPOSED ENACTMENT OF THE FLORIDA ELECTRONIC WILLS ACT 3, <https://www.flprobatelitigation.com/wp-content/uploads/sites/206/2017/05/RPPTL-Electronic-Wills-Act-White-Paper-Final.pdf> [<https://perma.cc/5WC4-3DUG>].

167. *How Are Subjects for New Acts Selected? About ULC*, UNIFORM L. COMMISSION, <https://www.uniformlaws.org> [<https://perma.cc/JF42-FJBP>].

168. *Compare* UNIF. L. COMM’N, Suzy Walsh, Turney Berry & Susan Gary, Memorandum to Electronic Wills Drafting Committee (Oct. 2, 2017), <https://www.uniformlaws.org/HigherLogic/System/DownloadDocumentFile.ashx?DocumentFileKey=db271b23-8200-d28d-1d55-987bcd262227&forceDialog=0> [<https://perma.cc/8DD2-S9AE>], *with* UNIF. L. COMM’N, UNIF. ELECTRONIC WILLS ACT (July 12–18, 2018), <https://www.uniformlaws.org/HigherLogic/System/DownloadDocumentFile.ashx?DocumentFileKey=a7011c26-ebd1-462d-9194-353ea7ee3cc4&forceDialog=0> [<https://perma.cc/2XNL-MAP2>] (marked “Draft for Approval”).

169. UNIF. ELEC. WILLS ACT (UNIF. L. COMM’N 2019).

170. *Id.* at pref. note.

171. UNIF. L. COMM’N, UNIF. ELEC. WILLS ACT 2 (May 29, 2019), <https://www.uniformlaws.org/HigherLogic/System/DownloadDocumentFile.ashx?DocumentFileKey=a7011c26-ebd1-462d-9194-353ea7ee3cc4&forceDialog=0> [<https://perma.cc/8JWK-4Q56>] (marked “Draft for Approval”) (“For-profit providers interested in offering services in electronic execution of wills and storage of electronic wills are promoting the idea of electronic execution of wills to state legislatures.”).

172. UNIF. ELEC. WILLS ACT § 5.

electronic wills since 2011.<sup>173</sup> Indiana adopted electronic wills legislation in 2018.<sup>174</sup> Arizona has allowed electronic wills since July 1, 2019.<sup>175</sup> Florida has allowed electronic wills since January 1, 2020.<sup>176</sup> This Part explores the contours of various state laws and the E-Wills Act. Beyond highlighting the legislative features that modernize the law of wills, this Part identifies aspects of existing state laws and the E-Wills Act that need further revision or attention in order to best serve the interests of testators in the twenty-first century.

### *B. The Uniform Electronic Wills Act*

#### 1. Simple but Revolutionary Changes

The ULC laid the groundwork for legal recognition of electronic signatures with the 1999 promulgation of the Uniform Electronic Transactions Act (UETA).<sup>177</sup> The UETA has been adopted by forty-seven states and the District of Columbia<sup>178</sup> and

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173. See NEV. REV. STAT. § 133.086 (2017).

174. IND. CODE §§ 29-1-21-1 to 29-1-21-18 .

175. ARIZ. REV. STAT. ANN. §§ 14-2516 to 14-2523.

176. FLA. STAT. §§ 732.503, 523 (effective Jan. 1, 2020) (2019 Fla. Laws 37). The Florida legislature had passed electronic wills legislation before in the 2018 Electronic Wills Act, but Governor Rick Scott vetoed the legislation four days before it was scheduled to take effect. Letter from Rick Scott, Florida Governor, to Ken Detzner, Florida Sec. of State (June 26, 2017), <https://www.flgov.com/wp-content/uploads/2017/06/HB-277-Veto-Letter.pdf> [<https://perma.cc/92ZD-JXE2>]; see also Craig R. Hersch, *Florida Governor Vetoes Electronic Wills Act*, WEALTHMANAGEMENT.COM (June 28, 2017), <http://www.wealthmanagement.com/estate-planning/florida-governor-vetoes-electronic-wills-act> [<https://perma.cc/7MY2-DEAX>] (attributing the veto to the failure to strike balance between potential fraud by would-be wrongdoers and convenience to the public). The 2019 legislation, effective January 2020, received support from the AARP and the Florida Bar's Elder Law Section, among other groups. See *Remote Notary, Electronic Wills Legislation Starts Senate Journey*, THE FLORIDA BAR (Apr. 5, 2019), <https://www.floridabar.org/the-florida-bar-news/remote-notary-electronic-wills-legislation-starts-senate-journey> [<https://perma.cc/BFC3-Z9UE>] (quoting a representative of the Florida Bar's Elder Law Section as saying the new law addresses "concerns about vulnerable adults and individual[s] who are susceptible to coercion and undue influence"). The 2019 legislation permits remote notarization but not for certain comprehensive powers of attorney and a "vulnerable adult" may execute an electronic will only with witnesses in the live, physical presence of the testator. See 2019 Fla. Laws 21, Electronic Legal Documents (creating Section 117.285(5)(g)). The Florida rules governing the execution of electronic wills relies on a separate provision of the state statutes that defines who is a "vulnerable adult." See, e.g., *id.* (creating Section 117.285(3)(c) requiring notice to a "vulnerable adult" as defined in FLA. STAT. § 415.102).

177. UNIF. ELEC. TRANSACTIONS ACT (NAT'L CONFERENCE OF COMM'RS ON UNIF. STATE LAWS 1999), <https://www.uniformlaws.org/HigherLogic/System/DownloadDocumentFile.aspx?DocumentFileKey=ac2376fb-2b2f-c5c3-ee9-0a363c600956&forceDialog=0> [<https://perma.cc/P6V4-Z4V6>].

178. *Electronic Transactions Act Enactment Status Map*, UNIF. LAW COMM'N, <https://www.uniformlaws.org/committees/community-home?CommunityKey=2c04b76c-2b7d-4399-977e-d5876ba7e034> [<https://perma.cc/Z7FM-NZUE>]. Washington, Illinois, and New York have not adopted the Uniform Electronic Transaction Act. *Id.*



grants electronic signatures the same full force and effect as a traditional, in-person signature, as long as the parties to a transaction agreed.<sup>179</sup> However, the UETA explicitly excludes from legal recognition electronic signatures to wills, codicils, or testamentary trusts.<sup>180</sup>

Congressional enactment of the Electronic Signatures in Global and National Commerce Act in 2000 extended the recognition of electronic signatures and records to interstate commerce.<sup>181</sup> That law explicitly permits states to modify, change, or even supersede the federal rules on electronic signatures, as long as the alternative state-specified procedures are not inconsistent with the federal law.<sup>182</sup> Like the UETA, the Electronic Signatures in Global and National Commerce Act excludes from its scope any contract or record subject to “a statute, regulation, or other rule of law governing the creation and execution of wills, codicils, or testamentary trusts.”<sup>183</sup>

The E-Wills Act recognizes as a valid will any “record that is readable as text at the time of signing” that has been “signed” by the testator (or another individual in the testator’s name, in the testator’s physical presence, and by the testator’s direction) and either “signed” by at least two witnesses, each of whom is resident of a state and physically located there, who either “signed in the physical [*or electronic*] presence of the testator within a reasonable time after witnessing the signing of the will . . . or the testator’s acknowledgement of the signing of the will.”<sup>184</sup> Alternately, the testator may acknowledge his or her signature “in the physical [*or electronic*] presence of a notary public or other individual authorized by law to notarize records electronically.”<sup>185</sup> The bracketed language is optional for states to adopt.<sup>186</sup>

Consider two important definitions in the statute: “record” and “sign.”<sup>187</sup> A *record* is “information that is inscribed on a tangible medium or that is stored in an electronic

179. *Electronic Transactions Act Summary*, UNIF. LAW COMM’N, <https://www.uniformlaws.org/committees/community-home?CommunityKey=a0a16f19-97a8-4f86-afc1-b1c0e051fc71> [<https://perma.cc/W2RU-ALJD>] (explaining the voluntary nature of Uniform Electronic Transactions Act).

180. UNIF. ELEC. TRANSACTIONS ACT § 3(b)(1) (explicitly exempting wills). Curiously, though, the UETA seems to have left open the possibility for the electronic execution of an *inter vivos* trust, even if intended to act as a will substitute. *See id.*

181. Electronic Signatures in Global and National Commerce Act, Pub. L. No. 106-229, 114 Stat. 464 (2000) (codified at 15 U.S.C. §§ 7001–7006, 7021, 7031).

182. 15 U.S.C. § 7002(a)(2)(A) (2012) (permitting non-conflicting state statutes or regulations).

183. *Id.* § 7003(a) (making federal law inapplicable to statutes governing wills, codicils, testamentary trusts, certain family law matters such as adoption and divorce, as well as the Uniform Commercial Code).

184. UNIF. ELEC. WILLS ACT § 5(a)(1)–(3) (UNIF. L. COMM’N 2019) (emphasis added).

185. *Id.* § 5(a)(B) (emphasis added). Earlier discussion drafts of the Electronic Wills Act did not permit for notarization of the will in lieu of witnesses. *See* UNIF. L. COMM’N, ELEC. WILLS ACT (Mar. 2–3, 2018), <https://www.uniformlaws.org/viewdocument/march-2018-committee-meeting-draf?CommunityKey=cbc99bfb-d91f-4388-b410-6054d41132cf&tab=librarydocuments> [<https://perma.cc/VS88-E4PR>] (marked “Draft for Discussion”).

186. *See* UNIF. ELEC. WILLS ACT § 5 leg. note (“A state that permits an electronic will only when the testator and witnesses are in the same physical location, and therefore prohibits remote attestation, should omit the bracketed words ‘or electronic’ . . .”).

187. *Id.* §§ 2(1), (5).

or other medium and is retrievable in perceivable form.”<sup>188</sup> An electronic will must be “a record that is readable as text at the time of signing.”<sup>189</sup> Thus, a will prepared on a home computer, a tablet device, or even an iPhone could qualify as an electronic will, but a video recording would not so qualify, because it is not “readable as text.”<sup>190</sup>

The broad definition of “record” in the E-Wills Act squares with the reality that people use electronic methods to accomplish many tasks in their everyday lives.<sup>191</sup> It is not unusual for a person to send an e-mail or text to communicate with a friend or business colleague, for example. The ease with which one can do so might give rise to concerns about impulsive or imprecise testators making wills on their phones. But impulsive and imprecise communication is common in traditional written formats, too. For that reason, electronic wills need not be singled out and instead should receive the same treatment as traditional writings (something the drafting committee recognized). After all, the principal function of wills formalities is the determination of a document’s *authenticity*—i.e., the court needs to be satisfied that this particular instrument was executed by the testator and the testator intended it to be the testator’s will.<sup>192</sup>

To *sign* for purposes of the E-Wills Act means to either “execute or adopt a tangible symbol” or to “affix or logically associate with the record an electronic, symbol or process,” as long as either act is done with the intention to authenticate or adopt the record.<sup>193</sup> Thus, a decedent’s typing his name in cursive font in a word processing program, writing his name on a tablet with a stylus, typing his name at the end of an iPhone note, or typing his initials in a text message all would constitute a “signature” for the purposes of the E-Wills Act.<sup>194</sup>

Notably, the E-Wills Act leaves to each adopting state the important decision about whether the testator and witnesses must sign in each other’s physical presence, or whether “electronic presence” will suffice. A state that wishes to maintain a traditional physical presence requirement may do so by disregarding the bracketed language in the statute.<sup>195</sup> For purposes of the E-Wills Act, *electronic* means “relating

188. *Id.* § 2(4).

189. *Id.* § 5(a)(1).

190. *See id.* §§ 5(a)(1), 2(4); *see also* E-mail from Susan N. Gary, Reporter to the Drafting Committee on Uniform Electronic Wills Act, to Professor Bridget J. Crawford (Jan. 2, 2020, 9:46 PM) (on file with the *Indiana Law Journal*).

191. *See supra* notes 188–92 and accompanying text; *see also* UNIF. ELEC. WILLS ACT pref. note (“People increasingly turn to electronic tools to accomplish life’s tasks, including legal tasks”).

192. *See* Bridget J. Crawford, *Wills Formalities in the Twenty-First Century*, 2019 WIS. L. REV. 269, 290–91 (2019) (arguing that determination of authenticity is the true purpose of wills formalities); *see also In re Groffman*, [1969] 2 All E.R. 108 (Eng.) (denying probate to will because both witnesses did not sign in the presence of each other, even though court expressed no doubt that decedent intended the document to be his will); *Bell v. Crewes*, [2011] NSW 1159, ¶¶ 44–45 (Austl.) (denying probate to a will that decedent affirmed he wished to adopt but had not yet signed).

193. UNIF. ELEC. WILLS ACT § 2(5). It would seem, then, that an audio file could contain both a “signature” and a “record.” *See supra* notes 188–92 and accompanying text.

194. *See supra* Sections I.B.1, 2, 5, 6.

195. *See supra* Sections I.B.1, 2, 5, 6; *see also* UNIF. ELEC. WILLS ACT § 5 leg. note (“A

to technology having electrical, digital, magnetic, wireless, optical, electromagnetic, or similar capabilities.”<sup>196</sup> That rounds out the meaning of “electronic presence,” defined as “the relationship of two or more individuals in different locations communicating in real time to the same extent as if the individuals were physically present in the same location.”<sup>197</sup> For states that choose to permit it, this language would appear to permit remote witnessing by means of common Internet-based platforms like FaceTime or Skype or a computer’s webcam with voice capability but not by means of a telephone only (without a video connection). Therefore, the E-Wills Act makes it possible for states to adopt legislation that permits testators and witnesses (and notary) to be separated by physical distance as long as the applicable technology enables them to speak to and observe each other, just as they could if they were physically together.<sup>198</sup> Of the four states that currently have electronic wills statutes, Arizona and Indiana do not permit remote witnessing (such as via a webcam).<sup>199</sup> Nevada and Florida do.<sup>200</sup>

Another notable provision of the E-Wills Act is that states have the option to adopt a harmless error rule for electronic wills, even if the state does not employ such a rule for traditional wills.<sup>201</sup> And in states that already have the harmless error rule, the Legislative Note to the E-Wills Act recommends that the rule be extended to electronic wills as well.<sup>202</sup> Under the harmless error rule of the E-Wills Act (modeled after the similar provision in the UPC),<sup>203</sup> a “record readable as text” not otherwise executed in compliance with the prescribed (electronic) formalities set forth in section 5 nevertheless must be treated as compliant if the proponent shows by clear and convincing evidence that the decedent intended the record to be the decedent’s will, partial or complete revocation of a will, or partial or complete revival of a formerly revoked will.<sup>204</sup>

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state that permits an electronic will only when the testator and witnesses are in the same physical location, and therefore prohibits remote attestation, should omit the bracketed words ‘or electronic’ . . .”).

196. UNIF. ELEC. WILLS ACT § 2(1).

197. *Id.* § 2(2).

198. *Id.* § 2 cmt. (“An electronic will may be executed with the testator and all of the necessary witnesses present in one physical location. In that case the state’s rules concerning presence for non-electronic wills . . . will apply. Because the E-Wills Act does not provide a separate definition of physical presence, and a state’s existing rules for presence will apply to determine physical presence.”).

199. ARIZ. REV. STAT. ANN. § 14-2518(A)(2)–(3) (2019) (stating that a witnesses must be physically present when testator signs or acknowledges electronic will); IND. CODE §§ 29-1-21-3(1), 4(1) (2019) (requiring testator and attesting witnesses to be in each other’s physical presence in the same physical location).

200. NEV. REV. STAT. § 133.088 (2017) (containing the first electronic wills act in the country, enacted in 2011); FLA. STAT. §§ 732.521–26 (effective Jan. 1, 2020) (2019 Fla. Laws 37) (same).

201. UNIF. ELEC. WILLS ACT § 6 (Alternative A).

202. *Id.* § 6 (Alternative B).

203. UNIF. PROBATE CODE § 2-503 (2010).

204. UNIF. ELEC. WILLS ACT § 6 (“Harmless Error”).

The E-Wills Act contemplates that an electronic will can be made self-proving, as long as the affidavit is executed simultaneously with the electronic will.<sup>205</sup> Wills cannot be made self-proving at a time subsequent to execution of the will.<sup>206</sup> In cases where the testator and witnesses are all physically present together, the self-proving affidavit must be executed before (and the seal affixed by) an officer authorized to administer oaths (such as a notary) in the jurisdiction where execution occurs.<sup>207</sup> If fewer than two witnesses are physically present with the testator, then the affidavit is made before (and the seal affixed by) a person authorized to receive oaths under section 14A of the Revised Uniform Law on Notarial Acts (2018) or a corresponding provision of state law, if any.<sup>208</sup> Practically speaking, this means that a state must have a provision allowing remote notarization, and the remote notary can perform the notarization in the jurisdiction where she holds her commission as long as the state where the electronic execution takes place (or the law of the decedent's domicile or residence) authorizes remote notarization by officers in the notary's jurisdiction.<sup>209</sup> So if a notary is authorized to take oaths in State A, and the will execution takes place in State B, with the testator and one witness in each other's electronic presence in State B (while the other witness is in State A), then as long as State B recognizes as valid the notarial acts of a remote notary located in State A, the affidavit has been validly executed and sealed. The remote notary must take certain precautionary measures to establish the identity of the testator and witnesses.<sup>210</sup>

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205. *Id.* § 8(a) (“An electronic will may be simultaneously executed, attested, and made self-proving by acknowledgment of the testator and affidavits of the witnesses”).

206. *Id.* § 8 cmt. (“The E-Wills Act does not permit the execution of a self-proving affidavit for an electronic will other than at the time of execution of the electronic will. An electronic will has metadata that will show the date of execution, and if an affidavit is logically associated with the electronic will at a later date, the date of the electronic will and the protection provided by the self-proving affidavit may be uncertain.”).

207. *Id.* § 8(b)(2). The “certificate under official seal” may also be “logically associated” with the electronic will. *Id.* The final version of the E-Wills Act does not specifically define “logically associated,” although in earlier versions, the Comment to Section 2 acknowledged that the term “has a meaning among those who use technology, and that meaning is sufficient for purposes of this act.” UNIF. L. COMM’N, UNIF. ELEC. WILLS ACT § 2 cmt. (May 29, 2019), <https://www.uniformlaws.org/HigherLogic/System/DownloadDocumentFile.ashx?DocumentFileKey=a7011c26-ebd1-462d-9194-353ea7ee3cc4&forceDialog=0> [https://perma.cc/8JWK-4Q56] (marked “Draft for Approval”).

208. UNIF. ELEC. WILLS ACT § 8(b)(1). Nine states have enacted a version of the Revised Uniform Law on Notarial Acts (2018). *See* REVISED LAW ON NOTARIAL ACTS (NAT’L CONFERENCE OF COMM’RS ON UNIF. STATE LAWS 2018), <https://www.uniformlaws.org/committees/community-home/librarydocuments/viewdocument?DocumentKey=05106380-7764-4e56-99ad-62b509ff9c0d> [https://perma.cc/BKZ4-AAAE] (listing as enacting states North Dakota, South Dakota, Montana, Idaho, Kentucky, Washington, Maryland, Iowa, and Minnesota).

209. *See* REVISED UNIFORM LAW ON NOTARIAL ACTS § 14A.

210. *See id.* § 14A(a)(3) (defining “identity proofing” as “a process or service by which a third person provides a notary public with a means to verify the identity of a remotely located individual by a review of personal information from public or private data sources”); *id.* § 14A(c) (permitting remote notarization where notary has personal knowledge of the affiant, has satisfactory evidence of the affiant’s identity by oath or affirmation from a credible witness, or where notary has used “two different types of identity proofing” and, in all cases,

The E-Wills Act contemplates that a “certified” paper copy of the electronic will can be presented to the court if accompanied by an affidavit that the paper copy is a true, complete, and accurate copy of the will.<sup>211</sup> An earlier draft required that any certification include the signatures of the testator, witnesses, and notary, if any, and any “associated document integrity evidence” that is part of the will.<sup>212</sup> The final version does not include this requirement; a legislative note observes that a state “may need to change its probate court rules to expand the definition of what may be filed with the court to include electronic filings” and that a state may want to “include procedural rules specifically for electronic wills.”<sup>213</sup> Thus, to the extent that a state wishes to have some paper version of the electronic will, the state is free to enact additional rules, but it appears that the drafters ultimately contemplated a “certification” that goes only to the accuracy of what is filed with the court, not the creation of a paper version—signed by the testator, the witnesses, and the notary—of the electronic document the testator had signed. This makes sense, in that the testator or the witnesses, or both, may not be available at the time the will is filed in court.

What makes the E-Wills Act so compelling is the seemingly simple modifications needed to radically change the ways testators can execute wills. The E-Wills Act expands traditional understandings of what is meant by a “record,” a “signature,” and even “presence.” The law of wills formalities can better match how people use technology in their everyday lives.

## 2. Anticipated Challenges to E-Wills Act

The E-Wills Act is an excellent starting point for electronic wills legislation, but states considering adopting the uniform law might consider additional issues. First, the legislation does not establish any requirements for the safeguarding or custodianship of an electronic will. On the one hand, this allows testators (or their attorneys) to securely store electronic documents on home or office computers. Just as there is not a statutory requirement for how a traditional written will must be kept, the E-Wills Act does not impose any special requirement on safeguarding electronic wills. Indeed, the absence of detailed statutory safeguarding requirements prevents the growth of a commercial industry in official “custodians” of electronic wills.<sup>214</sup> On the other hand, the E-Wills Act contains no safe harbors or presumptions of due execution that could apply uniquely to electronic wills to allow streamlined probate of conforming electronic documents that have been stored in a specific manner that minimizes the likelihood that they have been tampered with or altered.

Consider also how traditional signatures might interact with otherwise electronic wills. For example, the testator might type out the substantive provisions of her will

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retains certain records of the notarization).

211. UNIF. ELEC. WILLS ACT § 9 (“Certification of Paper Copy”).

212. UNIF. L. COMM’N, ELEC. WILLS ACT § 12 (Feb. 1–2, 2019), <https://www.uniformlaws.org/HigherLogic/System/DownloadDocumentFile.ashx?DocumentFileKey=506a61da-e7cc-9b69-0fe1-8df8df6bf431> [<https://perma.cc/FTY4-QHBR>] (marked “Draft for Discussion Only”).

213. UNIF. ELEC. WILLS ACT § 9 leg. note.

214. See *supra* note 171 and accompanying text.

using the Notes feature on her iPhone, just as the testator in *Yu* did.<sup>215</sup> In the presence of witnesses, the testator might sign the back of her phone with a permanent marker with the notation, “I am signing my will.” The witnesses would sign their names as well. Has the electronic will in the Notes of the iPhone been electronically “signed” or not? The present definition of an electronic “signature” does not answer this question clearly. Also, with traditionally executed wills, it is widely accepted that any mark—initials, nickname, or even a mere “X”—can serve as the testator’s signature.<sup>216</sup> Might an “X” in an electronic document be equally valid? What if the testator’s cat walks across the keyboard while the testator is typing leaving an odd sequence of characters—d8l9%h4l, for example—and the testator dies of a sudden heart attack before she can type her name at the end of the will? In the absence of witnesses, it might be difficult to determine that a cat, and not the testator, caused those marks to appear in the document. In other words, without extrinsic evidence, it would be impossible to know if the decedent had affixed her “mark” to the will or not. For that reason, it might be advisable to elaborate on the definition of what it means to *sign* an electronic document. While still allowing a mere mark to function as a signature, the E-Wills Act should specify what that mark should be (perhaps the testator’s first initial, the testator’s birth month, or a similarly simple character).

It is noteworthy that the E-Wills Act contemplates different rules for executing a self-proving affidavit depending on whether the witnesses are, or are not, present with the testator at the time of execution. It is not obvious, for example, why remote witnesses are sufficient for a valid electronic will but not for a valid self-proving affidavit, unless the notary is authorized to act remotely.<sup>217</sup> Is there a reason that the remote witnesses are deemed reliable enough for purposes of the will itself (no notarization necessary for the will to be valid) but not for purposes of the affidavit (the will is not self-proving unless the testator’s and witnesses’ signatures are notarized remotely)? An extra safeguard applied to electronic witnesses likely does little or no harm, and may in fact allow the judge to act as a back-stop to the otherwise automatic admission to probate of a will with a self-proving affidavit. Query, though, whether different rules for self-proving wills based on whether the witnesses are, or are not, physically present with the testator are grounded in any empirical reality. There is some evidence that holographic wills are correlated with an increase in the likelihood of further litigation, but more research is necessary.<sup>218</sup>

### C. State-Specific Electronic Wills Laws

Currently, Nevada, Arizona, Indiana, and Florida are the four states that permit any one or more of the testator, witnesses, or notary to sign a will electronically.<sup>219</sup>

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215. *See supra* Section I.B.5.

216. *See, e.g.*, Estate of McCabe, 274 Cal. Rptr. 43 (Ct. App. 1990) (probating will that testator signed with “X” while hospitalized in a weakened physical state).

217. *See supra* notes 209–15 and accompanying text.

218. *See, e.g.*, David Horton, *Do-It-Yourself Wills*, 53 U.C. DAVIS L. REV. (forthcoming 2020), [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3476367](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3476367) [<https://perma.cc/A269-QF5X>] (finding in study of estates of 457 decedents who died in 2007 with wills probated in Alameda County, California, that rate of litigation was 7.5% for attorney-drafted wills and 15.1% for holographic or self-prepared wills using commercially available software).

219. NEV. REV. STAT. §§ 133.040, 133.085 (2017).

Nevada has had the most experience with electronic wills legislation as it enacted the nation's first law in 2010. Despite the (comparatively) long history of electronic wills in Nevada, there have been no reported cases questioning the validity of a will executed in accordance with its electronic wills laws.

In 2017, Nevada amended its electronic wills statutes to permit notaries to perform their services electronically if the notary satisfies certain requirements such as making an electronic recording of the notarial act,<sup>220</sup> verifying the identity of the person whose oath is taken,<sup>221</sup> and keeping an electronic journal of notarial acts.<sup>222</sup> The Nevada statute is different from the E-Wills Act in that the Nevada statute imposes on a "qualified custodian" of an electronic will the affirmative obligation to store securely the will and other supporting evidence of the will's execution.<sup>223</sup> The E-Wills Act is silent on matters relating to the storage and safeguarding of electronic wills.

Individuals may sign a Nevada electronic will with an electronic signature or by affixing to the will an image of a handwritten signature.<sup>224</sup> A testator may also "sign" a will by means of an "authentication characteristic," defined as a quality "unique to that person and that is capable of measurement and recognition in an electronic record as a biological aspect of or physical act performed by that person."<sup>225</sup> The Nevada statute provides as examples of an "authentication characteristic" a fingerprint, a retinal scan, voice recognition, facial recognition, video recording, a digitized signature, or "other commercially reasonable authentication using a unique characteristic of the person."<sup>226</sup> It is not clear, however, what that commercially reasonable authentication might be, although the language flexibly allows for future new technological developments.

Effective July 1, 2018, Indiana permits wills (including self-proving affidavits), trusts, and powers of attorney to be created, signed, and stored digitally.<sup>227</sup> In the case of an electronic will, the Indiana law requires the testator and attesting witnesses to be in each other's physical presence at the time they sign, and they must observe each other signing the will.<sup>228</sup> An "electronic signature," for purposes of Indiana law, means "an electric sound, symbol, or process attached to or logically associated with an electronic record and executed or adopted by a person with the intent to sign the

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220. NEV. REV. STAT. § 240.1995 (2018) (stating that electronic notary public shall arrange audio-visual recording of each notarial act).

221. *Id.* (requiring electronic notary public to confirm identity of person whose oath is being taken by personal knowledge or several government-issued identifications or methods).

222. *Id.* § 240.201 (requiring electronic notary to keep electronic journal of each electronic notarial act).

223. *Id.* § 133.320 (providing duties of a qualified custodian of an electronic will).

224. *Id.* § 133.085.1(b).

225. *Id.* § 133.085.5(a).

226. *Id.*

227. H.B. 1303 §§ 2–4, 6(b), 120th Gen. Assemb., 2d Reg. Sess. (Ind. 2018) (discussing electronic wills, electronic trusts, powers of attorney, and the manner in which an electronic will may be self-proved).

228. IND. CODE § 29-1-5-5(2) (2018) (requiring joint physical presence of testator and witnesses).

electronic record.<sup>229</sup> The will must be maintained by a “custodian,” which is defined as a person other than the testator, an attorney, a person who is named in the testator’s will as personal representative, or a person who is a beneficiary under the will.<sup>230</sup> A testator may maintain an electronic will on a personal computer or digital storage device, on the attorney’s computer system, an online (“cloud”) storage service, or with a third-party custodian who safeguards the document.<sup>231</sup>

In Indiana, a “complete converted copy” of the electronic will (meaning a version of the electronic will reduced to paper form) may be offered for probate in the same way a traditional will is, if accompanied by a specific affidavit.<sup>232</sup> The person who created the copy of the electronic will must file an affidavit in which the person affirms or swears when the will was created, if not specified in the instrument; when and how the will was discovered; the method by which the electronic will was stored and retrieved; the methods used to prevent alterations to the document and ensure its accuracy and authenticity; a statement that the document has not been altered since creation; and confirmation that an electronic document was created at the time the testator made the electronic will.<sup>233</sup> In other words, the court requires assurance that the paper copy is a true and correct copy of the document that the decedent intended to be her last will and testament. The primary concerns are *authenticity* and accurate transcription in making the transition from one medium to another.

Arizona’s law permits a testator, witnesses, and notary to sign an electronic document with a digital signature. But, generally speaking, all of the parties still need to be present at the time of signature or when the testator affirms her signature.<sup>234</sup> (An earlier version of the bill had contemplated remote witnessing of a will by means of any two-way audio/video conferencing system, but those provisions were not included in the final law.)<sup>235</sup> Once executed, an electronic will must be preserved electronically by a “qualified custodian.”<sup>236</sup> A qualified custodian is someone other than a relative of the testator by blood, marriage, or adoption; someone other than a beneficiary under the will or a relative by blood, marriage, or adoption of a beneficiary under the will; and someone who “shall consistently employ and store electronic records of electronic wills in a system that protects electronic records from destruction, alteration[,] or unauthorized access and detects any change to an

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229. *Id.* § 29-1-21-3(9) (defining “electronic signature” by reference to UETA definition); *see also* 26 IND. ADMIN. CODE 2-8-102 (2019) (defining “electronic signature” for purposes of UETA).

230. IND. CODE § 29-1-21-3(4) (defining “custodian”).

231. *See id.* § 29-1-21-6 (specifying advisory instructions that anyone who provides a testator with an electronic will form or interface must include, and such instructions direct a testator on how to revoke a will that is being stored “on your own computer or digital storage device”).

232. *Id.* § 29-1-21-9(b).

233. *Id.* § 29-1-21-13 (specifying contents of necessary affidavit).

234. H.B. 2656, 53d Leg., 2d Reg. Sess. (Ariz. 2018).

235. S.B. 1298, 53d Leg., 1st Reg. Sess. (Ariz. 2017) (permitting remote witnessing of electronic wills). The bill did not come to a vote.

236. H.B. 2656, 53d Leg., 2d Reg. Sess. (Ariz. 2018) (defining and describing the duties of a “qualified custodian”).



electronic record.<sup>237</sup> In other words, it is not legally sufficient to store an electronic will on the typical home computer or even on most attorneys' office computers. Because there are a variety of commercial providers that already possess the technological capability to meet the requirements of a "qualified custodian," they stand to benefit from this type of legislation.

Interest in electronic wills likely will grow, and there is no doubt that companies that offer digital storage and other related services will be forceful advocates for electronic wills legislation.<sup>238</sup> The Colorado Bar Association has charged a committee to study the topic of electronic wills and make specific recommendations.<sup>239</sup> In 2017 and 2018, at least three other U.S. jurisdictions considered legislation that would recognize electronic wills in some format. The New Hampshire Electronic Wills Act would have permitted electronic signature by the testator and a notary or two witnesses, via video recording, with the will stored by a "qualified custodian."<sup>240</sup> Legislation proposed in Virginia was quite similar to the New Hampshire bill: a testator and either two witnesses or a notary could sign a will electronically if a "qualified custodian" then took control of both the electronic will itself and proof of identity of all of its signatories.<sup>241</sup> The District of Columbia considered changing its law to permit execution of an electronic will—in the form of an electronic record—to be signed by an "electronic sound, symbol, or process attached to or logically associated with a record and executed or adopted by a person with the intent to sign the record."<sup>242</sup> These jurisdictions may take up the issues again now that the E-Wills Act has been approved; other states are likely to follow suit.

From the E-Wills Act and the electronic wills laws of Nevada, Indiana, and Arizona, two commonalities emerge: a desire to extend legal recognition as wills to documents that are not necessarily printed on paper and the permission to accept as an electronic signature some authenticating mark or indicator by the testator as proof of the testator's "signing" of the will. Details of remote witnessing or notarization, as well as safeguarding the electronic will, are not consistent across the proposed or enacted legislation, however. Florida, a jurisdiction that enacted electronic wills legislation only after other legislation failed, contains uniquely detailed requirements for wills with remote witnesses and remote notaries.

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237. *Id.*

238. Electronic wills have been the subject of academic interest for some time. *See, e.g.,* Gerry W. Beyer & Claire G. Hargrove, *Digital Wills: Has the Time Come for Wills to Join the Digital Revolution?*, 33 OHIO N.U. L. REV. 865, 866, 890–92 (2007) (describing obstacles to adoption of electronic wills statutes, including lack of ability to authenticate single document as testator's will). For more information on the involvement of for-profit entities in lobbying for the passage of electronic wills legislation, see Sam Harden, *Electronic Wills, Access to Justice, and Corporate Interest*, LAWYERIST (Mar. 20, 2017), <https://lawyerist.com/blog/electronic-wills-access-justice-corporate-interests/> [<https://perma.cc/4MRT-MMWV>], which identifies Bequest, Inc., as the motivating force behind Florida legislation.

239. Holland & Hart LLP, *Electronic Wills*, NAT'L L. REV. (July 5, 2017), <https://www.natlawreview.com/article/electronic-wills> [<https://perma.cc/W97V-6X2L>] (describing reporting on formation of Colorado bar committee).

240. S.B. 40, 2017 Sess. (N.H. 2017).

241. H.B. 1643, 2017 Sess. (Va. 2017).

242. B. 22-0169, 22d Council Period (D.C. 2017).

*D. Lessons from the Florida Experiment:  
Electronic Wills Rejected and then Adopted*

1. Objections of the Organized Bar of the Initial Florida Legislation

In 2017, the Florida legislature successfully passed electronic wills legislation,<sup>243</sup> but the law was vetoed by Governor Rick Scott just four days before it was to take effect.<sup>244</sup> The organized Florida bar reacted strongly and negatively when the Electronic Wills Act was introduced in the Florida Senate, noting that the bar's Real Property, Probate and Trust Law Section did not originate the legislation (and impliedly had not been consulted).<sup>245</sup> The Section then issued a "white paper" detailing objections to the statutory language as well as four broader policy concerns.<sup>246</sup> Although the organized bar did not explicitly speak out against corporate interests, the legislation seems to have been pushed through by a for-profit business that was positioning itself to provide remote witnesses, notaries, and services as a "qualified custodian" (the required keeper of any electronic will under the proposed legislation).<sup>247</sup>

The Florida Bar Association's Real Property, Probate and Trust Law Section critiqued the legislation in terms of authenticity and legal process. First, the white paper noted, the law lacked safeguards against fraud or exploitation of the testator if the notary or witnesses might not be in the same room as the testator.<sup>248</sup> The Section also was not satisfied that the legislation could guarantee the identities of the testator and the witnesses.<sup>249</sup> Third, the Section noted the absence of any storage or security protocols that would preserve electronic wills and prevent unauthorized users from gaining access to them.<sup>250</sup> Known custodians of a large number of electronic wills might be irresistible targets for would-be malfeasors, the Section noted.<sup>251</sup> Its fourth policy-based objection was to the seeming haste with which such a fundamental

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243. H.B. 277, 2017 Leg. (Fla. 2017) ("Florida Electronic Wills Act").

244. See, e.g., Craig R. Hersch, *Florida Governor Vetoes Electronic Wills Act*, WEALTH MGMT. (Jun. 28, 2017), <http://www.wealthmanagement.com/estate-planning/florida-governor-vetoes-electronic-wills-act> [<https://perma.cc/C99B-2ULQ>] (describing Governor Scott's objections to the Florida law).

245. REAL PROPERTY, PROBATE AND TRUST LAW SECTION TO THE FLORIDA BAR, WHITE PAPER ON PROPOSED ENACTMENT OF THE FLORIDA ELECTRONIC WILLS ACT I (2017), <https://www.flprobatelitigation.com/wp-content/uploads/sites/206/2017/05/RPPTL-Electronic-Wills-Act-White-Paper-Final.pdf> [<https://perma.cc/CZ75-85WR>].

246. *Id.* at 2–16.

247. See Dan DeNicuolo, *The Future of Electronic Wills*, ABA (Oct. 15, 2018), [https://www.americanbar.org/groups/law\\_aging/publications/bifocal/vol\\_38/issue-5--june-2017/the-future-of-electronic-wills/](https://www.americanbar.org/groups/law_aging/publications/bifocal/vol_38/issue-5--june-2017/the-future-of-electronic-wills/) [<https://perma.cc/X2MC-DFEC>] ("Willing.com, a website which claims to have 'the world's best estate planning software,' drafted and pushed the 2017 bill in Florida.>").

248. *Id.* (noting frequency of wrongful behavior directed at a testator).

249. *Id.* (stating that a photocopy of a driver's license, for example, is not sufficient proof of an individual's identity, presumably because false documents can be obtained easily).

250. REAL PROPERTY, PROBATE AND TRUST LAW SECTION TO THE FLORIDA BAR, *supra* note 245, at 4–5.

251. *Id.* at 4 (describing recent cyber attacks on U.S. banks and businesses).

change to existing law had been prepared and considered.<sup>252</sup> The Section's white paper went on to identify a variety of other issues, essentially exposing the passed bill as fundamentally flawed.<sup>253</sup> At least some of those concerns seemed to have resonated with the Florida governor and contributed to his veto decision.

## 2. Objections of the Governor

In vetoing the Florida Electronic Wills Act four days before it was to take effect in 2017 (minus the remote witnessing and notarization provisions, which were scheduled to be delayed until 2018), Governor Rick Scott issued a public statement explaining his actions.<sup>254</sup> His concerns echoed those articulated by the Real Property, Probate and Trust Law Section of the Florida Bar; in places, the language of his veto letter mirrored the Bar's white paper almost word for word.<sup>255</sup> Governor Scott also focused on the potential overburdening of Florida courts by allowing the probate of nonresidents' wills based solely on the qualified custodian's location in the state of Florida, even if the estate had no other Florida nexus.<sup>256</sup>

Governor Scott did not close the door completely on the concept of electronic wills. He called the idea "innovative" and said it "may transform estate planning for Floridians," but he believed that the legislation as drafted was too flawed to be signed into law.<sup>257</sup> The law fails to strike the proper balance "between providing safeguards to protect the will-making process from exploitation and fraud while also incorporating technological options that make wills financially accessible," Governor Scott wrote in his veto letter, and he encouraged the legislature to revisit the legislation.<sup>258</sup>

It is illuminating to consider this veto statement in the context of the traditional stated purposes of wills formalities.<sup>259</sup> Governor Scott led with concerns about

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252. *Id.* at 4–5.

253. *Id.* at 6–16. These include questions about how an electronic will would be deposited with the court, who had legal responsibility for making such a deposit, how disputes regarding an electronic will's due execution would be handled, and whether Florida electronic wills would be accepted for probate in other states. *Id.*

254. Compare Letter from Florida Governor Rick Scott to Florida Secretary of State Ken Detzner (June 26, 2018), <https://www.flgov.com/wp-content/uploads/2017/06/HB-277-Veto-Letter.pdf> [<https://perma.cc/B33W-GBR5>] (describing governor's duty to make sure that notaries "safeguard the most vulnerable Floridians against fraud and exploitation") with REAL PROPERTY, PROBATE AND TRUST LAW SECTION TO THE FLORIDA BAR, *supra* note 245 (explaining that "without providing adequate safeguards to prevent fraud and exploitation of Florida's most vulnerable citizens").

255. Letter from Florida Governor Rick Scott to Florida Secretary of State Ken Detzner, *supra* note 254; see also REAL PROPERTY, PROBATE AND TRUST LAW SECTION TO THE FLORIDA BAR, *supra* note 245.

256. Letter from Florida Governor Rick Scott to Florida Secretary of State Ken Detzner, *supra* note 254, at 2 (stating concerns about burdening Florida courts with wills of out-of-state residents with Florida custodians).

257. *Id.* at 1–2.

258. *Id.*; see also DeNicuolo, *supra* note 247 (attributing veto to failure to balance between making wills easier and cheaper to execute and protecting testators from predation).

259. See *supra* Section I.A.2.

protecting testators from “fraud and exploitation,”<sup>260</sup> referring implicitly to the protective function of witnesses being physically present at a traditional will execution. Given that Florida does not recognize valid holographic wills executed in Florida, even if valid in the jurisdiction where executed,<sup>261</sup> Governor Scott’s emphasis on the importance of witnesses is consistent with the spirit of existing Florida law. But also embedded in his statement is a concern (“fraud”) that can be understood as relating to the *authenticity* of the document (i.e., that the document presented for probate is the document that the testator intended to be his will and it is the document that the testator signed). Blockchain technology, discussed in Part IV, might be able to provide the assurances that would address any concerns about will authenticity.

### 3. Successful Legislation

In 2018, the Florida legislature again took up electronic wills legislation.<sup>262</sup> Finally, in 2019, legislation passed, and testators have been able to execute Florida electronic wills since January 1, 2020.<sup>263</sup> Like the Nevada legislation (and unlike the Indiana or Arizona legislation), and like the earlier iterations of the Florida law, the successful Florida electronic wills act permits remote, technology-assisted witnessing and notarization of wills.<sup>264</sup> Florida electronic wills can be made self-proving but only if the electronic will designates a “qualified custodian” that holds the will until it is offered for probate and the qualified custodian certifies that it (or another qualified custodian) has had “custody” of the electronic will at all times and not altered it in any way before presentation for probate.<sup>265</sup> A qualified custodian must be domiciled in and a resident of (or incorporated in) the state of Florida, and regularly employ a “secure system” and store in that system electronic wills, “records attached to or logically associated with electronic wills,” and all acknowledgments and proofs associated with online notarization.<sup>266</sup>

The Florida rules for online (or remote) electronic notarization are particularly elaborate, with three different sets of conditions to satisfy. Generally speaking, a Florida online notary may take an oath from anyone located anywhere as long as the notary is physically present in Florida.<sup>267</sup> The online notary must either personally know the identities of the testator and witnesses or receive three separate proofs of identity for each party: government-issued identification (such as a driver’s license);

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260. Letter from Florida Governor Rick Scott to Florida Secretary of State Ken Detzner, *supra* note 254, at 1–2.

261. FLA. STAT. § 732.502(1)(b) (2017) (requiring two witnesses for a valid Florida will); *see also id.* § 732.502(c)(2) (according no recognition under Florida law to holographic wills executed in jurisdictions that permit holographic wills).

262. S.B. 1042, 2018 Leg., 120th Sess. (Fla. 2018).

263. FLA. STAT. §§ 732.521–56 (effective Jan. 1, 2020).

264. Fla. Electronic Wills Act, H.B. 277, 119th Sess. (Fla. 2017).

265. FLA. STAT. § 732.503 (2019) (self-proof of electronic will).

266. *Id.* § 732.524 (definition of qualified custodian).

267. *Id.* § 117.265(1) (“An online notary public physically located in this state may perform an online notarization that meets the requirements of this part regardless of whether the principal or any witnesses are physically located in this state at the time of the online notarization.”).

“credential analysis” of the government-issued identification; and “identity proofing . . . in the form of knowledge-based authentication or another method of identity proofing.”<sup>268</sup> The notary accomplishes “credential analysis” by using commercial products specifically designed for that purpose.<sup>269</sup> The notary engages in “identity proofing” by asking the person “five or more questions with a minimum of five possible answer choices per question,”<sup>270</sup> such as which of the addresses in a list the person has *not* lived at in the last ten years, and the like.

Second, the notary of a will, health care advance directive, trust with “testamentary aspects,” any spousal waiver, or power of attorney, must ask three questions of the person whose signature will be notarized:

1. Are you under the influence of any drug or alcohol today that impairs your ability to make decisions?
2. Do you have any physical or mental condition or long-term disability that impairs your ability to perform the normal activities of daily living?
3. Do you require assistance with daily care?<sup>271</sup>

A “yes” answer to any one of those questions means that the witnesses to the document must be physically present with the person executing the instrument in order for the notarization to be valid.<sup>272</sup>

Finally, the notary must ask the testator five specific questions, set forth in the statute:

1. Are you currently married? If so, name your spouse.
2. Please state the names of anyone who assisted you in accessing this video conference today.
3. Please state the names of anyone who assisted you in preparing the documents you are signing today.
4. Where are you currently located?
5. Who is in the room with you?<sup>273</sup>

Based on the answers to those questions, the notary “shall consider the responses” in carrying out the notary’s duties.<sup>274</sup>

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268. *Id.* § 117.265(4)(b) (2019).

269. *Id.* § 117.295(3)(b) (detailing “credential analysis” methods).

270. *Id.* § 117.295(3)(a)(1) (detailing “security characteristics” of “identity proofing by knowledge-based authentication”).

271. *Id.* § 117.285(5) (effective Jan. 1, 2020).

272. *Id.* § 117.285(5)(b).

273. *Id.* § 117.285(5)(d).

274. *Id.* § 117.285(5)(e).

Taken in the aggregate, the requirements for remote notarization in Florida go well beyond the verification of the signer's identity. Questions about whether the testator is under the influence of drugs or alcohol or dependent on others for assistance, or if others have participated in the procurement of the will or are present at its execution go to whether the testator is under undue influence or whether there may be fraud involved.<sup>275</sup> In other words, the notary appears to be assuming some of the traditional functions—protective and cautionary—of wills formalities.<sup>276</sup> Given the multiple procedures required for remote will execution in Florida, Professor LaPiana observes that “these sort of signatures seem to require much more preparation than picking up a pen and pushing it across a page.”<sup>277</sup> At least in some cases, then, new electronic wills legislation has not made executing wills any easier than it was to do so under traditional requirements.

#### *E. Solving Open Questions About Electronic Wills*

The E-Wills Act and existing state electronic wills legislation suggest that there is a growing interest in reforming the law to meet the needs of testators in the twenty-first century. Many people are comfortable working in entirely digital formats, and it is logical that they would want to create legally effective wills in this medium as well. Although the Uniform Law Commissioners and many state legislators appear to agree in principle that electronic wills are desirable, there remain competing concerns. One concern raised by electronic wills is the need to have a reliable and secure record of *what* the decedent intended to be her will and that a presented electronic document (or derivative thereof) *is* the decedent's will. Although traditionally the evidentiary, channeling, cautionary (or ritual), and protective functions long have been used to justify wills formalities,<sup>278</sup> it is not clear that the formalities retain any vitality given the widespread recognition of holographic wills (that do not require witnesses) and the adoption of the harmless error rule.<sup>279</sup> Given that many jurisdictions are quick to forgive errors in traditional will execution, then as long as the proponent can prove that a document is the decedent's authentic will, it should be admitted to probate. Authentication of wills would be greatly facilitated by technology developed in a different context for another purpose. Just as curb cuts were developed to allow access for people with wheelchairs and now are used by many more people for multiple purposes, blockchain technology—developed in the digital currency and financial contexts—may be the solution to the authentication of electronic wills.

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275. This is Professor William LaPiana's astute observation. See William P. LaPiana, Remarks at Pace Law School Faculty Colloquium, Sept. 4, 2019 (on file with the *Indiana Law Journal*).

276. See *supra* Section I.A (discussing purpose of wills formalities).

277. See William P. LaPiana, *Electronic Wills: Radical Change or Inevitable Evolution?* (manuscript on file with the *Indiana Law Journal*).

278. See *supra* text accompanying note 20.

279. See Crawford, *supra* note 192, at 290–91 (arguing that wills formalities do not accomplish their stated purposes).

## III. BLOCKCHAIN IN THE TWENTY-FIRST CENTURY ECONOMY

## A. Overview of Blockchain

Blockchain first became popular because of Bitcoin, the digital currency system with a history that may never be known completely, but is nevertheless associated with the Winklevoss twins.<sup>280</sup> Cameron and Tyler Winklevoss, the Harvard graduates and Olympic rowers who claimed to have founded Facebook with Mark Zuckerberg (and famously settled that case for \$65 million), were early investors in Bitcoin.<sup>281</sup> In August 2008, an unknown person or entity registered the Internet domain name *bitcoin.org*.<sup>282</sup> Shortly thereafter, members of an e-mail distribution list for code and cipher writers began to circulate a short white paper written by “Satoshi Nakamoto” (a pseudonym) who explained and advocated for a peer-to-peer electronic cash system.<sup>283</sup> The white paper argued that financial institutions were market leaders in electronic Internet payments because those were the entities trusted by third parties.<sup>284</sup> Nakamoto identified the principal weakness of the financial institution-centered model, namely the de facto reversibility of any electronic payments: “[c]ompletely non-reversible transactions are not really possible, since financial institutions cannot avoid mediating disputes.”<sup>285</sup> For that reason, Nakamoto proposed a “framework of coins made from digital signatures.”<sup>286</sup> Such a framework would provide a clear ownership system and would prevent owners from spending the same coin twice. The payment system would rely on a centralized ledger system, or “block chain” (now commonly known as blockchain) that would provide a public history of all transactions.<sup>287</sup> Each transaction would receive an assigned “key” so that the

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280. Nathaniel Popper, *How the Winklevoss Twins Found Vindication in a Bitcoin Fortune*, N.Y. TIMES (Dec. 19, 2017), <https://www.nytimes.com/2017/12/19/technology/bitcoin-winklevoss-twins.html> [<https://perma.cc/X575-SLKA>] (describing Cameron and Tyler Winklevoss’s settlement of their dispute with Mark Zuckerberg over Facebook ownership and their early investment in Bitcoin).

281. *Id.*

282. See *Domain Name Registration Data Lookup*, ICAAN LOOKUP, <https://lookup.icann.org/lookup> [<https://perma.cc/U57D-MTXC>] (searching “bitcoin.org” shows server hosted at “NameCheap.com”). NameCheap is a web hosting provider. See *Search for Your Domain Name*, NAMECHEAP, <https://www.namecheap.com/> [<https://perma.cc/MKP5-PLT7>]. Because of the protections offered by the hosting provider, it is not possible to determine the identity of the owner of the domain name.

283. Satoshi Nakamoto, *Bitcoin: A Peer-to-Peer Electronic Cash System*, BITCOIN.ORG <https://bitcoin.org/bitcoin.pdf> [<https://perma.cc/BC9H-J6TB>]; see also Bernard, *supra* note 282 (providing brief overview of the history of Bitcoin). The identity of the person (or persons) writing as “Satoshi Nakamoto” is unknown; it is the subject of considerable speculation. See, e.g., Benjamin Wallace, *The Rise and Fall of Bitcoin*, WIRED.COM (Nov. 23, 2011, 2:52 PM), [https://www.wired.com/2011/11/mf\\_bitcoin/all/](https://www.wired.com/2011/11/mf_bitcoin/all/) [<https://perma.cc/MMK4-MX7Z>] (calling Satoshi Nakamoto “clearly a pseudonym”).

284. Nakamoto, *supra* note 283, at 1 (“Commerce on the Internet has come to rely almost exclusively on financial institutions serving as trusted third parties to process electronic payments.”).

285. *Id.*

286. *Id.* at 8.

287. *Id.* at 2.

parties' identities were never revealed to the public.<sup>288</sup> The ledger itself would be maintained by members of the public who opted to participate; a limited number of those who were able to solve certain cryptographic equations could verify the transaction and add it to the ledger, receiving compensation (in the form of digital currency) for their work.<sup>289</sup>

Blockchain technology is what makes cryptocurrency possible. That particular market shows no sign of shrinking.<sup>290</sup> Blockchain has the potential to transform legal practice, as well as other professions and industries. Lawyers have only begun to explore its legal applications.<sup>291</sup> Consider how law might change in substance and in form if there were a formal blockchain registry of finalized land deeds, for example. The existence of a ledger for digital transactions could address century-long legal problems. If there were only one cryptokey associated with each parcel of real property, then possession of the cryptokey—not registration with government officials—would be best evidence of title. There would be no need to race to record title, and the way property ownership has been tracked for years would be transformed into a virtual system almost unrecognizable to preceding generations of lawyers.<sup>292</sup>

At the simplest level, blockchain is a digital public transaction ledger that multiple decentralized users create and maintain.<sup>293</sup> Each user, or “node,” holds a copy of the entire blockchain, or ledger.<sup>294</sup> When new data enters the system, the ledger aggregates that data into a “block” that receives a date and time stamp that cannot be changed.<sup>295</sup> Every transaction can be anonymous because the ledger assigns to each

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288. *Id.* at 6.

289. *See id.* at 3–5 (describing peer-to-peer operation of network via a timestamp network and majority decision making). One problem with this peer-to-peer operation is that it has generated substantial new demand for electricity, associated with enormous server farms set up to continuously run the code that could yield a large Bitcoin “payday.” *See, e.g.,* Timothy B. Lee, *Bitcoin’s Insane Energy Consumption, Explained*, ARSTECHNICA.COM (Dec. 6, 2017, 7:30 AM), <https://arstechnica.com/tech-policy/2017/12/bitcoins-insane-energy-consumption-explained/> [<https://perma.cc/BA6W-XDM8>] (citing estimate that Bitcoin network uses as much power as the entire country of Denmark).

290. *See* Jeffrey Mazer, *Demystifying Cryptocurrencies, Blockchain, and ICOs*, TOPTAL.COM, <https://www.toptal.com/finance/financial-consultants/cryptocurrency-market> [<https://perma.cc/PF2B-S8M7>] (estimating market cap for cryptocurrency as up to \$2 trillion in 2018).

291. *See, e.g.,* Fenwick et al., *supra* note 17, at 379 (citing the need for law schools to teach about “exponentially increasing disruptive innovation worldwide”); Angela Walch, *The Path of the Blockchain Lexicon (and the Law)*, 36 REV. BANKING & FIN. L. 713, 746 (2017) (describing need for regulators, in particular, to “[l]earn [e]verything [a]bout [b]lockchain”).

292. *See, e.g.,* JESSE DUKEMINIER, JAMES E. KRIER, GREGORY S. ALEXANDER & MICHAEL H. SCHILL, PROPERTY 580–81 (2006) (tracing origins of public recordation of title in America and describing problems in “first to record” versus “race-notice” jurisdictions). Digital records now facilitate title searches in many counties. *See, e.g.,* John L. McCormack, *Torrens and Recording: Land Title Assurance in the Computer Age*, 18 WM. MITCHELL L. REV. 61, 73–74 (1992) (describing digitization of real property title registration systems).

293. For an excellent overview of blockchain, see Blockchain Futures Lab, INSTITUTE FOR THE FUTURE, <http://www.iftf.org/blockchainfutureslab/> [<https://perma.cc/FVS5-6P8J>].

294. Bryce Suzuki, Todd Taylor & Gary Marchant, *Blockchain: How It Will Change Your Legal Practice*, ARIZ. ATT’Y, Feb. 2018, at 13.

295. *Id.* at 14.



user an encrypted digital signature that is untraceable to its “true” owner.<sup>296</sup> Multiple users running the same protocol confirm that a particular trade, transfer or activity has occurred by completing a complex mathematical formula that requires reference to prior data in the public ledger.<sup>297</sup>

The first and perhaps best-known application of blockchain is the digital currency Bitcoin.<sup>298</sup> The creation of a currency per se was not the end goal of the group or individual known as Satoshi Nakamoto in circulating the 2008 white paper advocating for a peer-to-peer electronic cash system.<sup>299</sup> Yet Bitcoin and its primary competitors Ethereum, Dash (formerly XCoin), Litecoin, and Ripple XRP<sup>300</sup> are made possible only because of the peer-maintained, decentralized digital ledger of transactions that is blockchain. In broad terms, the system functions as a series of verifications. For example, Party A sends to the network a request to sell a particular Bitcoin to Party B. Party B sends to the network a request to purchase that Bitcoin from Party A. The network transmits the requests to all of the nodes, which then decide by a process—one that has been determined in advance (and may be as simple as a finding that the particular Bitcoin is owned by Party A)—whether the transaction is authentic.<sup>301</sup> The authentication determination is made though what is known as “proof of work,” or completion of a mathematical problem that can be solved only if, in this example, the history contained in the ledger shows that Party A is the true owner of the subject Bitcoin.<sup>302</sup> This process of determining validity of the transaction via the solving of a mathematical equation is called “mining,” and the “miners” receive fees or digital currency for their work in verifying the transaction. A miner posts the solution to the network, and other nodes can verify whether the miner has solved correctly the mathematical problem.<sup>303</sup>

Once the requisite percentage of nodes confirms that Party A is the owner of the particular Bitcoin, for example, the transaction is aggregated into a block, which is added to the “chain,” and the transaction is complete.<sup>304</sup> These steps happen almost instantaneously. Once verified, each block bears the most recent timestamp as well

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296. *Id.* at 15 (“A public blockchain . . . allows the identity of the individuals involved in the transaction to be anonymous, as each user has a digital signature that is strongly encrypted and cannot be used to identify the person or entity associated with that pseudonym.”).

297. *Id.*

298. Winklevoss Bitcoin Trust, Registration Statement (Form S-1), at 1 (July 1, 2013), available at <http://www.sec.gov/Archives/edgar/data/1579346/000119312513279830/d562329ds1.htm> [<https://perma.cc/P6D3-Q62R>].

299. *See supra* text accompanying note 283.

300. *See* Laignee Barron, *5 Bitcoin Rivals That Are Rapidly on the Rise*, FORTUNE (Dec. 4, 2017, 4:28 AM), <http://fortune.com/2017/12/04/bitcoin-ethereum-cryptocurrency-block-chain/> [<https://perma.cc/EAP6-R4BZ>] (explaining ways that each digital currency differs from Bitcoin).

301. *See, e.g.*, S. ASHARAF & S. ADARSH, DECENTRALIZED COMPUTING USING BLOCKCHAIN TECHNOLOGIES AND SMART CONTRACTS 34–35 (2017). A simple example of a process for determining authenticity is if a majority of network nodes agree that Party A is the owner of the particular Bitcoin. *See id.*

302. Ameer Rosic, *What Is Cryptocurrency: Everything You Need to Know*, BLOCKGEEKS.COM, <https://blockgeeks.com/guides/what-is-cryptocurrency/> [<https://perma.cc/RYL3-545B>].

303. *Id.*

304. *Id.*

as the stamps associated with all previous blocks showing the chain of ownership of that particular Bitcoin. After multiple nodes have confirmed that the historic chain is identical, the chain of title to that particular asset (or “block”) is deemed to be highly trustworthy.<sup>305</sup>

One way to understand how blockchain verifies a cryptocurrency transaction is by analogy to a traditional personal check. Like a personal check made out to Person A, Person A may own a digital coin. But instead of a check that reads, “Pay to the Order of Person A,” the digital coin carries with it a history of all of the transfers leading up to the direction to “Pay to the Order of Person A.” With the digital coin, when Party A then transfers it to Party B, Party A effectively adds Party B to the end of the chain in the public key. It is as if Party A took the check made out to Party A and endorsed it on the back with the direction to “Pay to the Order of Party B.” Party B could then sign and write “Pay to the Order of Party C,” and so on, creating a visual record of the chain of ownership of the money represented by the check, just as digital currency contains a record that goes back to the original owner.<sup>306</sup> But in the case of digital coins (as opposed to cash represented by a single negotiable instrument, for example), without parallel records, it would be impossible to determine whether the assets had been previously used or transferred. For that reason, a digital record must be kept “on” the digital coin itself so as to ensure that the owner did not double spend or transfer it, and duplicates of the ownership record are maintained (or “distributed”) across multiple nodes.

Lawyers and law students will be familiar with another cluster of problems that arise in the world of analog evidence of ownership: problems of deed transfers. The deed to Blackacre, for example, is the record of ownership of Blackacre, but without a centralized, tamper-free recording office, only recording the deed can stop someone from selling Blackacre more than once.<sup>307</sup> For that reason, states have developed a variety of systems, including a “race to the courthouse” model, so that the purported purchaser who first records the deed to Blackacre becomes its true owner.<sup>308</sup>

Blockchain enthusiasts describe a distributed ledger’s security as a function of its design. In other words, requiring proof-of-work to validate a transaction lowers the chances of a malicious attack by someone unwilling or unable to invest significant

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305. Readily understandable explanations of blockchain can be found in a variety of publications. *See, e.g.*, Jordan Cutler-Tietjen, *Wading Into Yale’s Cryptocurrency*, YALE DAILY NEWS (May 5, 2018, 5:43 PM), <https://yaledailynews.com/blog/2018/05/05/wading-into-yales-cryptocurrency/> [<https://perma.cc/LWM8-9F7G>] (describing cryptocurrency investment, arbitrage and other activity of “hobbyists, economists, entrepreneurs, skeptics, computer scientists, social theorists and diehard day traders”).

306. *See, e.g.*, Daniel E. Murray, *Check Scams: The Facts Remain the Same, Only the Law Changes*, 49 U. MIAMI L. REV. 607 (1995) (describing a variety of problems involving multiply- or fraudulently-indorsed checks and evolution of governing law).

307. *See, e.g.*, Carol M. Rose, *Crystals and Mud in Property Law*, 40 STAN. L. REV. 577, 587–88 (1988) (describing the role of deeds in real property transactions).

308. *Id.* at 577 (explaining that the ultimate problem in such a “race” jurisdiction is failing to record the deed at all); *see also* Jeffrey D. Neuberger, Wai L. Choy & Trevor M. Dodge, *Modernizing Real Estate Records with Blockchain*, THE NAT’L L.F. (Jun. 30, 2018), <https://nationallawforum.com/2018/06/30/modernizing-real-estate-records-with-blockchain/> [<https://perma.cc/JJ72-KTN5>] (discussing blockchain as way of improving state and local real estate recording records).

time and resources in accessing the system.<sup>309</sup> Furthermore, the fact that verification of any one transaction necessarily involves scrutiny of every prior transaction involving that asset, changing past records—maintained in duplicate across multiple nodes—becomes too expensive and time consuming to be profitable.<sup>310</sup> It is this security or trust in the distributed ledger that inspires the search for more and more complex applications for blockchain technology.

### B. Questions and Problems Associated with Cryptocurrencies

At the 2018 annual meeting of shareholders of the Berkshire Hathaway Company, Warren Buffet described Bitcoin as “probably rat poison squared.”<sup>311</sup> For the ordinary investor, cryptocurrency is subject to extraordinary fluctuations in value,<sup>312</sup> and there is a widespread sentiment that those who are entering the cryptocurrency market now are seeking a “get rich quick” scheme, when those who stand to profit maximally have been in the market for some time.<sup>313</sup> Bill Harris, former CEO of PayPal and Intuit, has called Bitcoin “a colossal pump-and-dump scheme” and a “scam,” saying that “[c]ryptocurrency is best-suited for one use: [c]riminal activity.”<sup>314</sup> Another prominent business leader, Robert Herjavec (perhaps more well known as one of the “sharks” on the popular television show *Shark Tank* than for his global information technology security work) has called Bitcoin “the current-day tulip trade bubble,” while also praising the staying power of blockchain technology.<sup>315</sup> Even so, almost every day brings news reports of another prominent individual or finance group making a substantial investment in cryptocurrency.<sup>316</sup>

309. See, e.g., J. Travis Laster & Marcel T. Rosner, *Distributed Stock Ledgers and Delaware Law*, 73 BUS. LAW. 319, 321–24 (2018) (explaining that taking control of a network is expensive).

310. *Id.* at 325 (“The resources required to change a past transaction increase exponentially as each block is added to the chain, quickly becoming cost-prohibitive.”).

311. See, e.g., Teresa Rivas, *No Bitcoin for the Oracle: Warren Buffet Dismisses Cryptocurrencies*, BARRONS (May 7, 2018, 10:07 AM), <https://www.barrons.com/articles/no-bitcoin-for-the-oracle-warren-buffett-dismisses-cryptocurrencies-1525702064> [<https://perma.cc/KX2L-YUMH>] (calling digital currencies “nonproductive assets”).

312. See, e.g., Merryn Somerset Webb, *I Told You Investing in Bitcoin Was a Bad Idea*, FIN. TIMES (Jan. 19, 2018), <https://www.ft.com/content/42822ebe-fc4a-11e7-9b32-d7d59aace167> [<https://perma.cc/BAB5-A8HA>] (noting drastic price in Bitcoin in late December 2017).

313. Octavio Blanco, *Why Investing in Digital Currencies Like Bitcoin is So Dangerous*, CONSUMER REPORTS (Jan. 12, 2018), <https://www.consumerreports.org/cryptocurrency/why-investing-in-digital-currencies-like-bitcoin-is-so-dangerous/> [<https://perma.cc/9NR6-8FTU>] (citing reasons not to invest in cryptocurrency).

314. Marketwatch, *Former PayPal CEO: Bitcoin a Scam*, THE WEALTH ADVISOR (Apr. 25, 2018), <https://www.thewealthadvisor.com/article/former-paypal-ceo-bitcoin-scam> [<https://perma.cc/4NF7-P9TD>].

315. Tom Huddleston Jr., “*Shark Tank*” Stars Discuss Investing Amid Stock Volatility, Tax Reform, and Bitcoin, FORTUNE (Feb. 23, 2018, 12:06 PM), <http://fortune.com/2018/02/23/shark-tank-sharks-stocks-tax-reform-bitcoin/> [<https://perma.cc/8VHU-PCSD>].

316. C. Edward Kelso, *First Soros, Now Rockefellers Move into Cryptocurrency*, BITCOIN NEWS (Apr. 8, 2018), <https://news.bitcoin.com/first-soros-now-rockefellers-move-into-cryptocurrency> [<https://perma.cc/Y9QF-P7DC>] (describing investment in Coinfund, an investment group that focuses on cryptocurrency start-up companies).

Perhaps not unsurprisingly, some financial advisors (who may or may not receive commissions on digital currency sales) are more sanguine about cryptocurrency, although they do caution about its unregulated state.<sup>317</sup> The federal Securities and Exchange Commission (SEC) is pursuing multiple investigations of “initial coin offerings,” monitoring for illegal activity and examining sales that are, in effect, a promise to make future payments of digital currency in return for a present payment.<sup>318</sup> The Financial Industry Regulatory Authority issued an Investor Alert as early as 2014, warning investors about risk and fraud associated with Bitcoin investments.<sup>319</sup>

### *C. Development of Distributed Ledgers for Financial Markets and Institutions*

With the realization that the technology underlying Bitcoin could be separated from the currency itself, financial institutions became the leading innovators in developing applications for blockchain technology. Many of these financial institutions want to make transactions quicker or more reliable, and to minimize the “middleman” role played by the United States government in settling securities transactions. In 2017, for example, the United States Patent Office granted to Goldman Sachs a patent for SETLcoin, a method for settling financial markets and cryptocurrencies.<sup>320</sup> Ordinarily, clearinghouses such as the National Securities Clearing Corporation, through its subsidiary the Depository Trust Company, settles most securities trades.<sup>321</sup> Because of the time lag between the execution of the trade and the settlement (which can be between one and three days), each party bears a certain amount of risk.<sup>322</sup> For example, one of the parties could default during the trading period; such a default would expose the buyer, the seller, and the clearinghouse to risk. Goldman’s SETLcoin product would change that by

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317. See, e.g., CETERA FINANCIAL GROUP, A FINANCIAL ADVISOR’S GUIDE TO BLOCKCHAIN, BITCOIN, AND CRYPTOCURRENCIES 10, <https://advisorhub.com/wp-content/uploads/2018/04/WP-Blockchain.pdf> [<https://perma.cc/28K3-8XSY>] (listing “Who likes Blockchain?” next to column describing “Who has reason to be wary of Blockchain?”).

318. See, e.g., Nikhilesh De, *SEC Official Says “Dozens” of Crypto Investigations Underway*, COINDESK.COM (Mar. 15, 2018, 8:07 PM), <https://tinyurl.com/yb5h6hhe> [<https://perma.cc/S9QR-HL9T>] (describing SEC investigation of Simple Agreements for Future Tokens, or so-called SAFTs, that pay investors digital currency in the future for cash payments now, suggesting a possible futures market susceptible to regulation).

319. Investor Alerts, *Bitcoin: More Than a Bit Risky*, FINRA (May 7, 2014), <http://www.finra.org/investors/alerts/bitcoin-more-bit-risky> [<https://perma.cc/T368-4WG8>].

320. US Patent No. 9,704,143 (filed July 11, 2017).

321. See, e.g., Settlement & Asset Services, DTCC, <http://www.dtcc.com/settlement-and-asset-services> [<https://perma.cc/4HLJ-98CQ>] (describing role of DTCC in the final steps of securities trading).

322. See, e.g., Laster & Rosner, *supra* note 309, at 327, 333 (2018) (noting that Delaware law permits corporations to maintain stock ledgers and communicate with shareholders via blockchain technology).

transferring funds immediately to traders' electronic wallets.<sup>323</sup> The product is essentially cryptocurrency for securities settlements.<sup>324</sup>

Beginning in 2015, Nasdaq OMX, the ownership group of the Nasdaq Stock Market, began to permit private companies to use blockchains to manage shares on the Nasdaq private market.<sup>325</sup> This was an early recognition that blockchain can solve problems of delay and verification. So too, the Australian Securities Exchange announced in 2017 its plans to replace its central-ledger Clearing House Electronic Subregister System with a blockchain distributed ledger.<sup>326</sup> A consortium of financial institutions, including IBM, JP Morgan Chase, and the Bank of England, are working together to develop an open source blockchain software called Hyperledger, intended to supplant the traditional centralized ledger of the Society for Worldwide Interbank Financial Telecommunication.<sup>327</sup> Financial markets and institutions stand to benefit enormously from transactions that can be made more quickly and with increased confidence.

#### *D. Other Uses of Blockchain*

##### 1. Corporate Applications

Like financial institutions, state and local governments have indicated an interest in harnessing the potential of blockchain technology. In the corporate context, for example, Delaware amended its General Corporation Law to allow Delaware corporations to use blockchain technology to maintain corporate records, including stock ledgers.<sup>328</sup> Using blockchain technology reduces the likelihood of human error in old-fashioned data entry and makes it possible to have a real-time, accurate list of shareholders. Because blockchain necessarily involves a time stamp for every single

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323. US Patent No. 9,704,143, *supra* note 320 (“Traders using the described technology exchange securities by presenting an open transaction on the associated funds in their respective wallets.”).

324. *Id.*

325. *See, e.g.*, John McCrank, *Nasdaq Partners with Chain to Bring Blockchain to Private Market*, REUTERS (June 24, 2015, 9:00 AM), <https://www.reuters.com/article/nasdaq-blockchain/nasdaq-partners-with-chain-to-bring-blockchain-to-private-market-idUSL1N0Z92I720150624> [<https://perma.cc/U9TF-74ZS>] (quoting CEO of Chain, the infrastructure provider for Nasdaq, as saying blockchain will lead to “better corporate governance model”).

326. *ASX Selects Distributed Ledger Technology to Replace Chess*, REUTERS (Dec. 7, 2017, 5:23 PM), <https://www.reuters.com/article/asx-blockchain/asx-selects-distributed-ledger-technology-to-replace-chess-idUSL3N1O65QO> [<https://perma.cc/EU5V-N4KR>].

327. Anna Irrera, *Hyperledger Releases Its First Production Ready Blockchain*, REUTERS (July 11, 2017, 11:12 AM), <https://www.reuters.com/article/us-blockchain-hyperledger/hyper-ledger-releases-its-first-production-ready-blockchain-idUSKBN19W1TT> [<https://perma.cc/R262-3GT5>] (describing collaboration among 150 engineers from 29 financial organizations).

328. *See, e.g.*, DEL. CODE ANN. tit. 8, § 219(c) (2017) (defining “stock ledger”). Prior to the revision of Delaware law, an individual (the corporate secretary) was required to maintain a simple stock ledger that depended on the shareholders' notification of the corporate secretary of any change in ownership. *See, e.g.*, *In re Appraisal of Dell, Inc.*, C.A. No. 9322-VCL, 2015 WL 4313206, at \*8 (Del. Ch. July 13, 2013) (describing responsibility of corporate secretary with respect to stock ledger).

transaction involving any one particular stock,<sup>329</sup> it is easy to keep track of the chain of ownership. For Delaware companies with hundreds and even thousands of shareholders conducting multiple transactions every day, the move to authentication and record keeping via a distributed ledger represents a substantial savings and convenience.

As in Delaware, Wyoming corporations are permitted to use blockchain technology to create and maintain corporate records.<sup>330</sup> In 2018, Wyoming also passed legislation that exempted blockchain-based tokens from the Wyoming Money Transmitters Act,<sup>331</sup> and excluded sellers of blockchain-based tokens from the definitions of security issuers and broker dealers.<sup>332</sup> At least one financial reporter has called Wyoming the “most blockchain-friendly in the country, with the promise of technological advancements to come.”<sup>333</sup>

If the adoption of distributed ledgers for corporate records and shareholder lists solves some problems, it may create others. Unless encrypted, the identities of shareholders would be known to anyone operating as a node on the network. Given that state law does not require Delaware corporations to make their shareholder lists public,<sup>334</sup> some shareholders would want to make sure that the distributed ledger was encoded to protect the names, addresses and other identifying information. To be sure, the data could be encrypted (adding a level of challenge for retail users who might forget their access code, for example) or a company could create a “permissioned” or private blockchain like Hyperledger, accessible only to designated individuals.<sup>335</sup> But without pooling resources, companies with a limited number of stockholders may find the setup costs prohibitive.<sup>336</sup> It is possible that as the technology improves and demand for platforms increases, costs for “proprietary” (or at least customizable and able to be made private) ledger systems will decline. In that

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329. *See supra* Section III.A.

330. *See, e.g.*, WYO. STAT. ANN. § 17-16-1601(c)–(d) (West 2018) (permitting record of shareholders to be kept “in the form of any information storage device or method . . . capable of conversion into written form within a reasonable time”).

331. *Id.* § 40-122-144 (exemptions from compliance with Wyoming Money Transmitters Act).

332. *Id.* § 17-4-206(b) (exempting person who “facilitates the exchange of an open blockchain token” from the definition of a broker dealer); *id.* §17-4-206(a) (deeming developers and sellers of open blockchain tokens as not securities issuers if certain other criteria met).

333. BitClave, *A Haven for Crypto in Wyoming*, MEDIUM (Apr. 9, 2018), <https://medium.com/bitclave/a-haven-for-crypto-in-wyoming-adf37cd87f83> [<https://perma.cc/E277-6LKP>] (lauding efforts of the citizen-based Wyoming Blockchain Coalition in pushing for legislative reform in that state).

334. Shareholders of record, but not members of the general public, have the right to request a Delaware corporation’s shareholder list. *See* DEL. CODE ANN. tit. 8, § 220(b) (2010) (detailing procedure for requesting stock list and access to certain other corporate records).

335. *See supra* note 327 and accompanying text.

336. Praveen Jayachandran, *The Difference Between Public and Private Blockchain*, IBM (May 31, 2017), <https://www.ibm.com/blogs/blockchain/2017/05/the-difference-between-public-and-private-blockchain/> [<https://perma.cc/PN4H-KXTR>] (explaining that a private blockchain can restrict participants and the types of transactions in which they can participate).

case, one would predict that almost every corporation would move to maintaining its corporate records and shareholder lists via a distributed network.

## 2. Governmental Applications

Governmental interest in blockchain is not limited to its application to corporations. Illinois, for example, has launched a program to create a digital identity blockchain for citizens, including birth certificates.<sup>337</sup> The Illinois Blockchain Initiative has held multiple annual meetings to bring together state and local leaders to consider how blockchain could be used to better deliver governmental services.<sup>338</sup> City officials in Austin, Texas, are attempting to use blockchain to store identifying information, including medical records, about the local homeless population, so that doctors and other care providers can access information about an individual's medical and social past.<sup>339</sup>

Employing blockchain for governmental purposes is not limited to the United States either. Dubai, for example, has launched a global "Blockchain Challenge" competition for proposals to make Dubai "the first blockchain-powered city by 2020" (although it is not quite clear what becoming a "blockchain-powered city" might entail).<sup>340</sup> Dubai also is planning for blockchain tracking of its import and export businesses.<sup>341</sup> Estonia has a blockchain-based "identity management system" that purportedly has improved delivery of services to that country's citizens.<sup>342</sup>

## 3. Other Applications

Outside of the corporate and governmental services contexts, other organizations are exploring blockchain's potential in a variety of arenas. At least one high-profile, nongovernmental organization, the United Nations' children's agency UNICEF, has tried to harness the energy and enthusiasm of those with access to significant computer processing power to help earn Ethereum-based cryptoassets for the benefit

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337. See Michael del Castillo, *Illinois Launches Blockchain Pilot to Digitize Birth Certificates*, COINDESK (Aug. 31, 2017), <https://www.coindesk.com/illinois-launches-blockchain-pilot-digitize-birth-certificates> [<https://perma.cc/S2JR-SCBS>].

338. See News, ILLINOIS BLOCKCHAIN INITIATIVE, <https://illinoisblockchain.tech/> [<https://perma.cc/7VRF-J9MK>] (listing multiple projects of the organization).

339. See *supra* note 12 and accompanying text.

340. See *Smart Dubai Blockchain Challenge 2019*, SMART DUBAI, <https://www.smartdubai.ae/newsroom/event-details/2019/03/30/default-calendar/smart-dubai-blockchain-challenge-2019#listingPage=1&tab=blogs> [<https://perma.cc/YW7U-TT37>] (providing a timeline for the international competition).

341. See, e.g., Richard Kastelein, *IBM Kicks Off Blockchain Initiative with Dubai Government*, BLOCKCHAIN NEWS (Feb. 10, 2017), <https://www.the-blockchain.com/2017/02/10/ibm-kicks-off-blockchain-initiative-dubai-government/> [<https://perma.cc/XH82-7VZH>] (describing use of blockchain system to communicate real-time data about shipments, imports and exports of goods).

342. Katalyse.io, *Blockchain Adoption in Government*, HACKERNOON.COM (Feb. 7, 2018), <https://hackernoon.com/blockchain-adoption-in-government-aa9d8e7dd7e3> [<https://perma.cc/682P-7D22>].

of Syrian children.<sup>343</sup> A Hong Kong-based nonprofit, the LGBT Foundation, has developed its own digital “pink dollar” that some retailers in San Francisco have agreed to accept as payment, with the goal of generating funds for disadvantaged LGBT people around the world.<sup>344</sup> A group called Sol is trying to create a cryptocurrency-fueled utopian society in Puerto Rico.<sup>345</sup> Polytechnics, a Barcelona-based institute founded by Amir Taaki, seeks to train “a politically motivated cadre of hackers to overturn state systems,”<sup>346</sup> although it is not obvious, at least to the casual observer, that such hacking activity would be targeted at totalitarian regimes only or who makes the determination that a regime is totalitarian.<sup>347</sup>

With so many groups in the private and public sectors focused on the potential of blockchain, the technology likely will transform the world of commerce and government in ways expected and unexpected. In the enthusiasm for blockchain, one also detects an aspiration that the technology can be harnessed to disrupt traditional social power dynamics. For example, organizations such as Women4Blockchain<sup>348</sup> and Cryptochicks<sup>349</sup> aim to educate and encourage women to develop uses for blockchain technology, presumably so that women can take advantage of lucrative opportunities in this developing market.<sup>350</sup> And some commentators advocate

343. See, e.g., Mathias Roumy, *UNICEF – Game Changers*, MAKEMEPULSE, <https://m.makemepulse.com/unicef-game-changers-41802cfa0b3c> [<https://perma.cc/3279-JWG9>] (reporting “the first humanitarian fundraising campaign” to mine the Ethereum to raise funds for UNICEF’s Syrian Children Help initiative).

344. Zoë Henry, *Why the LGBT Community Is Launching Its Own Cryptocurrency*, INC. (Feb. 22, 2018), <https://www.inc.com/zoe-henry/lgbt-community-launches-cryptocurrency.html> [<https://perma.cc/R7FB-H3FB>].

345. See e.g., CETERA FINANCIAL GROUP, *supra* note 317, at 14 (“People and Projects of Note”).

346. *Id.* (claiming that the institute “could give [Taaki] and his students the ability to establish a viable alternative to current state systems of power”).

347. See, e.g., Gian Volpicelli, *Amir Fought Isis in Syria, Now He’s Enlisting an Army of Hacker Monks to Save Bitcoin From Itself*, WIRED (Mar. 6, 2018), <https://www.wired.co.uk/article/amir-taaki-dark-wallet-cryptocurrency-bitcoin-revolution-catalonia> [<https://perma.cc/W23E-YYPG>] (praising Taaki’s organization’s ability “to empower revolutionary movements around the globe, starting from pro-autonomy Catalonia,” without acknowledgment of ways technology can be used to undermine democracies).

348. See *Women4Blockchain Hackathon and Conference*, WOMEN4BLOCKCHAIN, <https://www.women4blockchain.com> [<https://perma.cc/5FLP-KQ5J>] (describing the conference as the “first blockchain hackathon combining business, legal, and technical minds”).

349. *Changing Lives of Women and Youth*, CRYPTOCHICKS, <https://cryptochicks.ca> [<https://perma.cc/Q8BA-RYT2>] (describing importance of women learning about blockchain).

350. See, e.g., Victoria Hendersen, *Make Way for the “Crypto Queens,”* HACKERNOON.COM (Mar. 28, 2018), <https://hackernoon.com/make-way-for-the-crypto-queens-4945df6d33f> [<https://perma.cc/9522-NKUK>] (critiquing the “blockchain bro” culture of the blockchain world). *But see, e.g.,* Rachel Wolfson, *The Negative Impact of Having ‘All Women Panels’ At Blockchain and Cryptocurrency Conferences*, FORBES (Apr. 27, 2018, 1:36 PM), <https://www.forbes.com/sites/rachelwolfson/2018/04/27/the-negative-impact-of-having-all-women-panels-at-blockchain-and-cryptocurrency-conferences/#50eabb4a831e> [<https://perma.cc/YFW2-VPHM>] (critiquing all-female panels at blockchain conferences).



blockchain as a platform for building wealth for African Americans.<sup>351</sup> Whether blockchain can accomplish meaningful social transformation remains to be seen, but it is clear that blockchain is a blank canvas onto which many companies, governments, organizations and individuals are projecting hopes and visions for the future.

The potential for blockchain to transform the law is something that lawyers are only beginning to understand. Juryonline.com is a blockchain-based system that allows disputants, if they both agree, to submit their case to a randomly chosen jury that will decide small claims matters.<sup>352</sup> The cost for such a service is typically \$100 to \$200, a fraction of the cost that it would take to hire an attorney.<sup>353</sup> OpenLaw is an Ethereum-based system that aims to allow lawyers to create, manage, execute, and store contracts in a secure fashion.<sup>354</sup> So-called “smart contracts” (also known as digital contracts or blockchain contracts) can be coded and then spread across a distributed network that would validate any transaction (such as a sale of goods or the performance of services) if the parties to the agreement have performed as specified and the contract is confirmed by the network nodes.<sup>355</sup>

Consider the example of a loan agreement. Party X loans Party Y \$100,000 pursuant to a market-rate, five-year promissory note secured by marketable securities or other assets worth \$100,000. Interest compounds semi-annually and payments are due on each anniversary of the date of the note. In the event of any missed payment, the full amount of the loan plus any unpaid interest comes immediately due upon demand. Party X requests that the terms of the virtual contract be recorded into the blockchain and Party Y requests the same. The terms of the agreement are distributed throughout the network. If Party Y makes the requisite annual payment, then the loan continues for another year, and in the ordinary course of events, would be cancelled automatically after the expiration of the five-year term if all payments of principal and interest have been made. If Party Y misses any payment, then each node on the system notifies Party Y (and each other) of a breach of contract and the security interest (title to the marketable securities or another asset) transfers automatically to Party X. Party Y has every incentive to avoid defaulting on the loan in order to preserve Party Y’s reputation and the possibility that others will want to conduct business with Party Y in the future.

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351. See, e.g., Courtenay Brown, *Is Bitcoin the Next Black Wealth Creator?* MEDIUM (Dec. 1, 2017) (profiling Demetrick Ferguson, a 32-year old young American bitcoin investor), <https://medium.com/theplug/is-bitcoin-the-next-black-wealth-creator-993d77b40a41> [<https://perma.cc/Q3VR-T4F5>].

352. See Stewart Rogers, *Jury.Online Wants to Replace Lawyers With Blockchain Technology*, VENTUREBEAT (Oct. 23, 2017, 9:00 AM), <https://venturebeat.com/2017/10/23/jury-online-wants-to-replace-lawyers-with-blockchain-technology/> [<https://perma.cc/MF84-6QRV>] (describing service that will connect disputants with randomly selected jurors).

353. See *id.*

354. See *Introducing Open Law*, CONSENSYS (July 25, 2017), <https://media.consensys.net/introducing-openlaw-7a2ea410138b> [<https://perma.cc/JZR2-E4EJ>] (touting security of blockchain-based contracts’ ease with which they can be signed and amended, and import pre-drafted, plain-language contractual terms, if desired).

355. See, e.g., Ameer Rosic, *Smart Contracts: The Blockchain Technology That Will Replace Lawyers*, BLOCKGEEKS, <https://blockgeeks.com/guides/smart-contracts/> [<https://perma.cc/F78M-H6KG>] (describing fundamental structure of so-called “smart contracts”).

## IV. BLOCKCHAIN WILLS

The potential for blockchain to transform contracts<sup>356</sup> and real estate transactions,<sup>357</sup> to name just two areas, has received considerable attention, but prior to now, wills have been left out of the conversation entirely. This may be a legacy of the exclusion of wills and testamentary trusts from the Uniform Electronic Transactions Act in 1999,<sup>358</sup> itself seemingly motivated by the belief that wills and testamentary trusts are unlike other legal instruments. At many levels, this is patently true. A will is ambulatory and has no effect until the testator dies.<sup>359</sup> After death, the testator is not available to testify about intentions or meaning.<sup>360</sup> Viewed from a different perspective, however, wills are just like any other legal document. A will has specific provisions, and its terms are largely mandatory. The terms become binding and final upon the testator's death and must be carried out by the testator's designee, unless a spouse elects against a will, for example.<sup>361</sup>

Multiple salutary goals—ensuring that the testator appreciates the significance of the execution of a will; that the testator creates reliable evidence of her intentions for the disposition of property; that such evidence will be recognized easily by a court as a will; and preventing fraud, duress, undue influence and the like—are the reasons behind the law's demand for strict compliance with wills formalities.<sup>362</sup> But the law's movement away from rigid adherence to these requirements (whether through allowing holographic wills,<sup>363</sup> recognizing notarized wills<sup>364</sup> or forgiving major mistakes in execution via the harmless error doctrine<sup>365</sup>) signals a willingness to subordinate the ritual, evidentiary, cautionary, and channeling function of wills in favor of effectuating the decedent's intent when shown by clear and convincing evidence.<sup>366</sup>

Given changes to technology and the rise of digital media in all aspects of personal life, commercial transactions, and even legal affairs, it is not surprising that the

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356. *Id.*

357. S.H. Spencer Compton & Diane Schottenstein, *Questions and Answers About Using Blockchain Technology in Real Estate Practice*, 33 PRAC. REAL EST. LAW. 5, 7 (2017) (“Notably, in 2016, the Cook County Recorder’s office in Illinois announced that it will experiment with the use of blockchain technology for transferring and tracking real property titles and other public records.”).

358. *See supra* note 180 and accompanying text.

359. *See, e.g.*, EUNICE L. ROSS & THOMAS REED, WILL CONTESTS § 14:25 (2d ed. 2017) (describing the ambulatory nature of wills).

360. *See, e.g.*, C. Douglas Miller, *Will Formality, Judicial Formalism, and Legislative Reform: An Examination of the New Uniform Probate Code “Harmless Error” Rule and the Movement Toward Amorphism*, 43 FLA. L. REV. 167, 294 (1991) (explaining testator’s ability to testify regarding intention in antemortem probate proceeding).

361. *See, e.g.*, John P. Ludington, *Determination of, and Charges Against, “Augmented Estate” upon Which Share of Spouse Electing to Take Against Will is Determined Under Uniform Probate Code § 2-202*, 63 A.L.R. 4th 1173 (1988).

362. *See supra* note 20 and accompanying text.

363. *See supra* note 31 and accompanying text.

364. *See* Unif. Prob. Code. § 2-505 (permitting interested witnesses).

365. *See supra* Section I.A.

366. *See, e.g., supra* Section II.B.

Uniform Law Commission<sup>367</sup> and states like Nevada, Indiana, Arizona, and Florida are working to bring wills into the twenty-first century.<sup>368</sup> The E-Wills Act<sup>369</sup> as well as the Florida Electronic Wills Act<sup>370</sup> share three significant similarities: each explicitly provides for a digital (not printed) will, each contemplates the digital (or electronic) signing by the testator and witnesses, and each allows the testator and witnesses (or notary) to be separated by physical distance but connected via two-way, audio-visual technology. Critics of either or both iterations have raised valid concerns about reliability, safekeeping, and identity verification.<sup>371</sup>

The question, then, is whether blockchain technology can solve the potential problems with electronic wills, and if so, should drafters of model or actual legislation focus on a distributed network framework, instead of trying to graft old practices onto new technologies. The creation of a blockchain will would not require a significantly different platform than one of the platforms that is commercially available already. A person who wishes to create a will would nominate someone whose responsibility it would be to notify the network in the event of the testator's death. That person could be the nominated personal representative, the testator's attorney, or any other person having the mental capacity to do so. For discussion purposes, that person is designated as the "key custodian." After the intended testator notifies the network of her intention to create a will and the key custodian notifies the network of the acceptance of his responsibility to notify the network in the event of the testator's death, the terms of a coded will could be uploaded to the blockchain.

There would be one or two other crucial actors in this chain. Either a notary or two witnesses who were satisfied that the intended testator was acting of free will and not under any undue influence would confirm to the network, via a cryptokey granted to them by the testator, that they were acting as witnesses to the will. The identities of the testator, key custodian, notary, and witnesses could all be anonymized, as necessary, as could the terms of the will. Because the will "block" would be time stamped and distributed to all nodes, it would be difficult, if not impossible, for any malfeator to change the terms of the will.

If the testator later wished to change the terms of her electronic will, she would repeat the steps above. A "last in time" rule would apply, so that the terms in the last "block" of the chain would constitute the testator's will upon her death. The key custodian would be responsible for notifying the network of the testator's death, in which case, after the requisite number of nodes agreed that the condition had been met (such as, for example, if the key custodian entered the testator's death certificate into the blockchain), then the key custodian would be obligated to transfer the blockchain will to the nominated personal representative, or if none, to the appropriate court in the jurisdiction of the decedent's domicile.

Blockchain wills address the absence of clear evidence of the testator's intent and certainty about the authenticity of a document. Outstanding issues still to be addressed before there could be a completely smooth system for the probate of blockchain wills would include confirmation of the identities of the testator, key

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367. *See supra* Section II.B.1.

368. *See supra* Section II.C.

369. *See supra* Section II.A.

370. *See supra* Section II.C.

371. *See supra* Sections II.B.1–2.

custodian, and witnesses; coordination with existing state rules applicable to traditional wills; and the procedures for presenting an electronic will to the court for probate.<sup>372</sup> One might want to have potential testators, key custodians, notaries, and witnesses pre-certify their identity in accordance with recognized standards, for example.<sup>373</sup> These concerns are mostly administrative, though, and should not be an obstacle to the successful implementation of blockchain wills.

## V. BLOCKCHAIN AND THE FUTURE OF ESTATE PLANNING

Given the nature of a distributed network, blockchain wills are at least as reliable as a holographic will or a defectively executed will that is probated upon a showing of clear and convincing evidence that the decedent intended the document to serve as her will (or codicil, or revocation of a will or codicil).<sup>374</sup> By taking the steps to access the network and identifying a key custodian, the testator clearly intended to make a will and did so with serious aforethought, satisfying the *ritual* function.<sup>375</sup> The *evidentiary* function of wills formalities is satisfied by a blockchain will insofar as multiple, identical copies are maintained across the network and it would be difficult (or prohibitively costly and time consuming) to tamper with each copy of the will. That a blockchain will has witnesses at all means that it serves a greater *protective* function than a holographic will (with no witnesses at all), although it is not obvious that the presence of witnesses necessarily prevents actual fraud, duress or undue influence, or at least allegations of the same.<sup>376</sup> And finally, the fact that when the testator seeks to add the will to the blockchain, she indicates that the document is her will, a court can easily identify the document, once unencrypted, as the decedent's will, thereby satisfying the *channeling* function.

What the harmless error doctrine attempts to establish<sup>377</sup>—that the decedent intended a document to be her will—is equally, if not more clearly, established by a blockchain will than one written (or printed) on a piece of paper, tractor bumper, paper plate, or wall.<sup>378</sup> Blockchain wills strike a successful balance between upholding the purpose of the wills formalities and bringing the law of wills into the twenty-first century.

Proposing the extension of blockchain to electronic wills also invites an honest investigation of the ways in which the purposes of wills formalities are not necessarily well-served (or served at all) when the standards are relaxed. The

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372. These are not dissimilar to the policy concerns raised with respect to the Florida Electronic Wills Act by the Real Property, Probate and Trust Law Section of the Florida Bar. *See supra* Section II.D.

373. One example would be the National Institute of Standards and Technology in Federal Information Processing. *See Federal Information Processing Standards Publications*, NIST.GOV, <https://www.nist.gov/itl/publications-0/federal-information-processing-standards-fips> [<https://perma.cc/Z7HR-YP68>].

374. *See supra* note 32 and accompanying text.

375. *See supra* note 20 and accompanying text.

376. *See, e.g., In re Will of Moses*, 227 So.2d 829, 839 (Miss. 1969) (holding that woman's will prepared by third-party attorney was product of the undue influence by the testator's younger male love-interest).

377. *See supra* Section I.A.

378. *See supra* notes 40–43 and accompanying text.

discussion suggests that wills formalities do not in fact function as generations of scholars have claimed. That is, even when presented with a document in writing that has been signed by the testator and attested by witnesses,<sup>379</sup> nevertheless a will is vulnerable to attack on the grounds of fraud,<sup>380</sup> undue influence,<sup>381</sup> duress,<sup>382</sup> or lack of mental capacity.<sup>383</sup> The fact that compliance with wills formalities does not preclude these claims suggests that the formalities are doing something other than (or in addition to) what they claim.

If the purposes of formalities are not what scholars have claimed, entertaining a future in which blockchain wills become the norm suggests other functions of wills formalities. First, formalities authenticate—they help verify that a particular document is the one that the testator signed and declared to be her will.<sup>384</sup> Second, formalities serve as a clear breaking point between planning for post-mortem transfers and implementing an actual estate plan that the testator intends to become operative upon death. Traditional formalities and blockchain wills equally accomplish both of these goals.

#### CONCLUSION

Where blockchain wills appear to be superior to both traditional wills and electronic wills as contemplated by both the E-Wills Act<sup>385</sup> and various state legislation<sup>386</sup> is that blockchain wills are especially resistant to alteration or tampering. The distributed network means that copies of the will exist across multiple nodes and any discrepancy between versions would be identified easily by miners. To make blockchain wills a reality, however, lawyers and clients will need to understand how the underlying technology works and how to operate the appropriate user interface. For generations, the stereotypical will execution ceremony has been a serious affair in which pre-designated people in a room perform the choreographed activities of observation and signing; they follow a particular script.<sup>387</sup> Changing centuries-old practices will not be easy. But if making wills easier to execute is a priority, blockchain wills merit investigation.

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379. *See supra* note 20 and accompanying text.

380. RESTATEMENT (THIRD) OF PROP.: WILLS AND OTHER DONATIVE TRANSFERS § 8.3(d) (AM. LAW INST. 2003) (defining fraud).

381. *Id.* § 8.3(b) (defining undue influence).

382. *Id.* § 8.3(c) (defining duress).

383. *See, e.g.*, 95 C.J.S. *Wills* § 7 (2018) (defining testamentary capacity generally); RESTATEMENT (THIRD) OF PROP.: WILLS AND OTHER DONATIVE TRANSFERS § 8.1(b) (AM. LAW INST. 2003) (defining mental capacity).

384. Admittedly, self-proving affidavits appear to serve this function, but they have no bearing on the validity of the will. *See, e.g.*, Bruce H. Mann, *Self-Proving Affidavits and Formalism in Wills Adjudication*, 63 WASH. U. L.Q. 39, 39–40 (1985) (critiquing formalistic adherence to execution requirements).

385. *See supra* Section I.A.

386. *See supra* Section II.B.

387. For one practitioner's description of a recommended will execution ceremony, see Mollie Whitehead, *Key Elements of Effective Will Drafting and Execution*, 44 EST. PLAN. 26, 27–28 (2017).

In the not-too-distant future, executing a blockchain will likely may be no more difficult than registering online for a class at the local gym. When that day comes, if enough people have appropriate Internet access,<sup>388</sup> then making a will becomes a far less expensive and difficult task than it currently is. Blockchain wills, like “smart contracts,” could be pre-populated with questions customized to the user’s situation and designed to generate standard dispositive language<sup>389</sup> not unlike smart-drafting software used by sophisticated attorneys today.<sup>390</sup> In the short-term, only the most sophisticated lawyers and their clients likely would use blockchain wills. However, as the technology advances, it is possible to imagine that executing a blockchain will could be as simple as opening an app on a smartphone or tablet device.<sup>391</sup> Because the use of complex smartphones is more widespread among young people than the elderly, it may be that those who most wish or need to engage in estate planning would not be quick to adopt blockchain wills.<sup>392</sup> This is an area worthy of further inquiry.

How and why a society facilitates the transfers of wealth reveals a tremendous amount about that society’s values. If the overarching principle of the law of succession in the United States is the freedom of disposition, as the Restatement (Third) of Property articulates,<sup>393</sup> then the lawyers, as primary architects and custodians of the legal system, must make sure that the formalities associated with wealth transfers facilitate, rather than impede, a testator’s desires for the distribution of his property. Currently, wills formalities do not serve their stated purposes. Blockchain technology is a tool that allows the legal profession to address a concern lurking beneath received wisdom about the cautionary, protective, evidentiary, and channeling functions of wills formalities. Just as curb cuts that were intended to be used primarily by those in wheelchairs have turned out to benefit a larger group of people,<sup>394</sup> blockchain technology may have uses well beyond the cryptocurrency market. Blockchain may permit an unprecedented level of security and confidence in the authenticity of wills, bringing wills execution into the twenty-first century.

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388. Camile Ryan & Jaime Lewis, *Computer and Internet Use in the United States: 2015*, 37 AM. COMMUNITY SURV. REPS. 1, 2 (2017), <https://www.census.gov/content/dam/Census/library/publications/2017/acs/acs-37.pdf> [<https://perma.cc/F2DH-GNDX>] (showing that 77% of all households reported home Internet use in 2015, compared with 18% of all households in 1997).

389. See, e.g., Rosic, *supra* note 355.

390. See *Wealth Transfer Planning*, INTERACTIVE LEGAL, <https://interactivelegal.com/Wealth-Transfer-Planning.php> [<https://perma.cc/Y4GX-HVYU>].

391. According to the Pew Research Center, as of early 2018, 81% of adults in the United States have a smartphone, compared with 35% of adults in 2011. See *Mobile Fact Sheet*, PEW RESEARCH CENTER (June 12, 2019), <http://www.pewinternet.org/fact-sheet/mobile/> [<https://perma.cc/9DPJ-EPUV>].

392. *Id.* (segmenting smartphone ownership by age cohort, with ownership at the following levels: 96% among those 18–29; 92% among those 30–49; 79% among those 50–64; 53% of those 65 and older).

393. RESTATEMENT (THIRD) OF PROP.: WILLS AND OTHER DONATIVE TRANSFERS § 10.1 cmt a (AM. LAW INST. 2003) (“The organizing principle of the American law of donative transfers is freedom of disposition.”); see also Robert H. Sitkoff, *Freedom of Disposition in American Succession Law*, in FREEDOM OF TESTATION AND ITS LIMITS 501 (Antoni Vaquer ed., 2018).

394. See *supra* notes 1–8 and accompanying text.

