

**A COMMENT ON THE FUTURE:  
CONSIDERING BLOCKCHAIN TECHNOLOGY WITHIN THE  
UNITED STATES LEGAL SYSTEM**

ISABELLA A. JAGIELSKI\*

I. INTRODUCTION

Over thirty years ago, the human experience was changed forever with the inception of the World Wide Web in 1989.<sup>1</sup> During the Internet's early progression into the mainstream, it was a mystery as to how ingrained this new technology would be in the daily lives of individuals, businesses, and governments.<sup>2</sup> Thirty-one years later, the Pandemic of 2020 forced the entire world to necessarily rely on Internet-based technological services on the grandest scale as nationwide lockdowns and social-distancing were enforced.<sup>3</sup> Internet services saw usage spike from 40% to 100% and video-conferencing services, like Zoom, saw usage increase tenfold.<sup>4</sup> People were inevitably dependent on the Internet because it was the most comprehensive solution to continue with daily life from the home.<sup>5</sup> Communication with friends and family continued over social media platforms, businesses and schools adopted remote and hybrid models, and groceries appeared at the

---

Copyright © 2022, Isabella Jagielski.

\* Isabella ("Bella") Jagielski was the Editor-in-Chief of Volume 51 of Capital University Law School Law Review. She earned her Juris Doctor from Capital University Law School in May 2023. She received a Bachelor of Arts in Art History from Kent State University in May 2020. Leading Capital's Law Review was truly an honor, as this is a space for students and scholars to nurture their ideas in the most creative and unique ways. She is most appreciative to those who have supported her throughout this journey: her parents, brother, mentor, close friends, faculty advisor, and colleagues.

<sup>1</sup> *A Short History of the Web*, CERN, <https://home.cern/science/computing/birth-web/short-history-web#:~:text=Tim%20Berners%2DLee%2C%20a%20British,and%20institutes%20around%20the%20world> [<https://perma.cc/NG2G-423E>].

<sup>2</sup> *See id.*; Felicity Sheppard, *A Brief History of the Internet Over the Past 20 Years and the Role of the World Wide Web*, AUSTLN. BROAD. CO. NEWS, <https://www.abc.net.au/news/2014-05-25/internet-changes-over-20-years/5470442?nw=0> (May 27, 2014, 5:55 AM).

<sup>3</sup> Rahul De et al., *Impact of Digital Surge During Covid-19 Pandemic: A Viewpoint on Research and Practice*, 55 INT. J. INFO. MGMT. 1, 1 (2020), <https://www.sciencedirect.com/science/article/pii/S0268401220309622> [<https://perma.cc/NUC8-65T7>].

<sup>4</sup> *Id.*

<sup>5</sup> *See id.*

doorstep with a few clicks on an app.<sup>6</sup> Society adapted to a digital world at a time of necessity.

As the Internet inevitably continues to evolve at a rapid pace, it is imperative to address and consider how the current United States' systems in place for resolving disputes may grow alongside advancing technologies, while embracing their innovation in the process.<sup>7</sup> In this developing era of Internet achievement,<sup>8</sup> considering an advanced system for adjudication alongside a growing digital society appears necessary.

The Pandemic of 2020 shut the world down and forced millions of Americans to conduct their lives digitally.<sup>9</sup> During those uncertain times, it became clear our basic reality was more than capable of manifesting and operating in the digital sphere.<sup>10</sup> As we continue to embrace the digital age and the capabilities seen within blockchain technology become more widespread, evolving the current means of adjudicating disputes within the United States' legal system should be considered.

Blockchain technology allows its participants to maintain control and autonomy over various transactions, without the need for centralized entities, like large corporations, banks, or courts.<sup>11</sup> Rather than relying on third parties to facilitate transactions, blockchain participants can

---

<sup>6</sup> See *id.* at 1–2.

<sup>7</sup> See generally Riikka Koulu, *Blockchains and Online Dispute Resolution: Smart Contracts as an Alternative to Enforcement*, 13 SCRIPTED 40, 41 (2016).

<sup>8</sup> See Bobby Allyn, *People Are Talking About Web3: Is it the Future of the Internet or Just a Buzzword?*, NPR (Nov. 21, 2021, 6:00 AM), <https://www.npr.org/2021/11/21/1056988346/web3-internet-jargon-or-future-vision> [<https://perma.cc/J2NB-U4G9>]. With the emergence of platforms for communication owned by only a few large companies, the Internet has evolved from Web 1.0—which was beginning of the Internet in 1990s—to Web 2.0. *Id.* Next, Web 3.0 is on the horizon where users control their own data and Internet activity. *Id.*

<sup>9</sup> Kim Parker et al., *How the Coronavirus Outbreak Has—and Hasn't—Changed the Way Americans Work*, PEW RSCH. CTR. (Dec. 9, 2020), <https://www.pewresearch.org/social-trends/2020/12/09/how-the-coronavirus-outbreak-has-and-hasnt-changed-the-way-americans-work/> [<https://perma.cc/CKW5-XETH>].

<sup>10</sup> See *id.*

<sup>11</sup> Tina van der Linden, *Trust Me: Combining Online Dispute Resolution, Law and Blockchain Technology*, 15 INDIAN J.L. & TECH. 454, 457 (2019) (“If we compare this with the more traditional way of processing transactions, where a bank (or another centralised institution) keeps track of each individual’s position, approves and handles transactions, and remains in charge of all the administration, it is clear that the trust we invest in these intermediary ‘trusted third parties’ can instead be provided through blockchain networks.”).

independently transfer goods or exchange information in a secure, trustworthy manner.<sup>12</sup>

Many of these transactions are triggered through smart contracts, which automatically execute transaction steps of an agreement through blockchain technology.<sup>13</sup> As more smart contracts are utilized, there may become a greater need for dispute resolution that can efficiently handle the growth of cases arising from Internet use.<sup>14</sup>

Currently, when parties engage in “cross-border” transactions, or e-commerce, some companies utilize systems of online dispute resolution (ODR) in the event of a breach.<sup>15</sup> As more small claims increase alongside the growth of a digital marketplace, ODR has become an efficient tool in providing relief to businesses who interact with one another on a global scale.<sup>16</sup> The concept of ODR systems began in the 1990s and its purpose was to resolve e-commerce disputes in a more efficient manner than courts could.<sup>17</sup> The increase of small claims arising out of an surge in transactions on the Internet will only clog up a court’s docket more, and the use of ODR presents an alternative resolution mechanism for parties.<sup>18</sup>

---

<sup>12</sup> *See id.*

<sup>13</sup> Stuart Levi et al., *Legal Issues Surrounding the Use of Smart Contracts*, in BLOCKCHAIN & CRYPTOCURRENCY REGULATION 155, 155 (Josias N. Dewey ed., 2d ed. 2020), available at <https://mitchjackson.com/wp-content/uploads/2022/05/smart-contract-legal-issues.pdf>.

<sup>14</sup> *See generally* James Metzger, *Decentralized Justice in the Era of Blockchain*, 5 INT’L J. ONLINE DISP. RESOL. 69 (2018).

<sup>15</sup> Koulu, *supra* note 7, at 41. *See Online Dispute Resolution: Companies Implementing ODR*, UNIV. OF MO. SCH. OF L., <https://libraryguides.missouri.edu/c.php?g=557240&p=3832247#:~:text=Many%20companies%20have%20turned%20to,highlighted%20in%20this%20research%20guide> [<https://perma.cc/PM5S-KSXZ>] (Sept. 9, 2020, 12:38 PM) (explaining the history of ODR in eBay, PayPal, and ICANN).

<sup>16</sup> Antonia Menezes et al., ‘Under Pressure’: Integrating Online Dispute Resolution Platforms into Pre-insolvency Processes and Early Warning Tools to Save Distressed Small Businesses, 45 VIKAPLA: J. FOR DECISION MAKERS 79, 80 (2020).

<sup>17</sup> Erika Rickard & Qudsiya Naqui, *How Well Does Online Dispute Resolution Help Resolve Lawsuits Outside the Courtroom*, PEW (Jan. 19, 2021), <https://www.pewtrusts.org/en/research-and-analysis/articles/2021/01/19/how-well-does-online-dispute-resolution-help-resolve-lawsuits-outside-the-courtroom> [<https://perma.cc/3SHQ-4DUU>].

<sup>18</sup> Koulu, *supra* note 7, at 41.

Like most things, ODR has its downfalls, but has worked well with the progression of the Internet over time.<sup>19</sup> Much like the widespread increase of Internet usage twenty-some years ago, an increase in blockchain technology may follow in the footsteps of its predecessor.

In this digital age, users want to feel like they can trust in the transaction they partake in. With the emergence of blockchain technology, the uncertainty of transacting with an anonymous party decreases through self-executing smart contracts which eliminate the need for a third-party, like a court or ODR provider.<sup>20</sup> The looming future-issue of a reliable means for dispute resolution in a fast-paced digital revolution begs the legal field to consider the implications of blockchain technology and the disputes arising within the digital world.

Through an illustration of the underlying technology of blockchain and the application of smart contracts, this Comment draws inferences from dated works who seemingly predict the current need to revisit the legal infrastructures put in place many years ago. Then, through an analysis of ODR, this Comment further draws inferences between a country, a state, and a company, who have recognized the possibilities associated with blockchain technology and smart contracts. Finally, this Comment addresses some of the more hesitant concerns with these systems.

In essence, after nearly three years of a digital reality setting in, it appears necessary to encourage governments and entities to consider how blockchain technologies may be leveraged for the resolution of disputes in the future.

## II. BACKGROUND ON BLOCKCHAIN TECHNOLOGY, SMART CONTRACTS, AND THE FUTURE OF OUR LEGAL INFRASTRUCTURE

### A. *What Exactly is a Blockchain?*

Due to the increased popularity of cryptocurrency within the last ten years, the phrase “blockchain technology” has become synonymous with bitcoin, ether, and other available forms of digital currency.<sup>21</sup> These terms have caused confusion to the layperson who is unfamiliar with the nuances of this digital revolution—bitcoin is merely an application of blockchain.<sup>22</sup>

---

<sup>19</sup> *Id.* at 47–48 (providing examples of how ODR can go wrong by failed negotiations and lack of voluntary compliance).

<sup>20</sup> *Id.* at 48–49.

<sup>21</sup> Bloomberg Originals, *This Huge Bet on Blockchain Could Change a \$50 Trillion Industry*, YOUTUBE (Jan. 26, 2022), [https://www.youtube.com/watch?v=8Ee\\_OhLKv6E&t=192s](https://www.youtube.com/watch?v=8Ee_OhLKv6E&t=192s) [<https://perma.cc/23U4-NEUB>].

<sup>22</sup> *Id.*

Although the current fascination with cryptocurrency has become widespread across the globe, the attention should be diverted to the blockchain technology underlying and facilitating these digital transactions.<sup>23</sup>

In 2008, written by the pseudonymous Satoshi Nakamoto, the concept of blockchain technology was first described in the nine-page white paper that presented bitcoin to the public.<sup>24</sup> In the paper, bitcoin is described as a peer-to-peer version of electronic cash which allows for online payments to be sent directly from one party to another without going through any financial institution, or third-party.<sup>25</sup>

As the Internet became more ingrained into normal life, Nakamoto noticed e-commerce relied exclusively on financial institutions who served as trusted third-parties to process any electronic payment.<sup>26</sup> The issue was these institutions had no way of offering completely non-reversible transactions for non-reversible services, thus increasing the need for trust between merchants, customers, and the third-party.<sup>27</sup> Nakamoto saw this as an opportunity to develop a decentralized technology where no single person, entity, or government could control the network bitcoin existed upon.<sup>28</sup>

In simple terms, blockchain technology is a reliable form of record-keeping.<sup>29</sup> It is a permanent, immutable digital ledger used to record transactions in “blocks” of computer code that are time stamped and linked together to essentially show the provenance of a digital asset.<sup>30</sup> Digital assets can range from bitcoin to real estate, which are then stored in a generally public and immutable fashion.<sup>31</sup>

---

<sup>23</sup> Reggie O'Shields, *Smart Contracts: Legal Agreements for the Blockchain*, 21 N.C. BANKING INST. 177, 179 (2017).

<sup>24</sup> JEFF JOHN ROBERTS, *KINGS OF CRYPTO: ONE STARTUP'S QUEST TO TAKE CRYPTOCURRENCY OUT OF SILICON VALLEY AND ONTO WALL STREET* 8 (2021).

<sup>25</sup> SATOSHI NAKAMOTO, *BITCOIN: A PEER-TO-PEER ELECTRONIC CASH SYSTEM* 1 (2008).

<sup>26</sup> *Id.*

<sup>27</sup> *Id.*

<sup>28</sup> ROBERTS, *supra* note 24, at 8.

<sup>29</sup> Vinay Gupta, *A Brief History of Blockchain*, HARV. BUS. REV. (Feb. 28, 2017), <https://hbr.org/2017/02/a-brief-history-of-blockchain> [<https://perma.cc/35LD-TAPJ>].

<sup>30</sup> Kevin T. McCarthy, *Unanswered Legal Questions: Blockchain “Smart Contracts”*, FOR THE DEF., Mar. 2018, at 12.

<sup>31</sup> Peter Hans, *Digital Assets Explained*, WEALTHMANAGEMENT.COM (July 23, 2021), <https://www.wealthmanagement.com/alternative-investments/digital-assets-explained> [<https://perma.cc/34W6-ML72>].

Once a party transacts with another party, the transaction is verified by the participants of the blockchain network and is stored within a block of data.<sup>32</sup> That block is given a randomized string of letters and numbers, called a “hash.”<sup>33</sup> The hash within the block of data is linked to the hash of the transaction before and after it, thus creating the blockchain.<sup>34</sup> Therefore, if modifications were to be made within a block, those modifications would not be verifiable because the entire chain of data blocks would be destroyed due to the absence of these modifications in the coding originally agreed upon by a broad network.<sup>35</sup>

*B. What are Smart Contracts?*

The term “smart contract” was first introduced by Nick Szabo in the 1990s.<sup>36</sup> He described them as “a set of promises, specified in digital form, including protocols within which the parties perform on these promises.”<sup>37</sup> When describing smart contracts, most defer to drawing a comparison with vending machines as the original form of these systems: The vending machine functions on a rule when a particular amount of money is inserted into the slot, that amount is verified by the machine, and the user is able to pick a snack or beverage of choice automatically.<sup>38</sup> This system illustrates the most basic process of payment and automatic actions conditional upon the received payment.<sup>39</sup>

To expand the use of blockchain technology on a wider scale, Vitalik Buterin created a new blockchain called, “Ethereum,” in 2013.<sup>40</sup> Ethereum changed the future of the technology by implementing smart contracts as open-sourced blockchain protocols which directly control the transfer of digital currencies or assets between parties under certain terms and

---

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

<sup>33</sup> *Id.*

<sup>34</sup> AARON WRIGHT ET AL., THE CARDOZO BLOCKCHAIN PROJECT, “SMART CONTRACTS” & LEGAL ENFORCEABILITY 2 (2018), <https://larc.cardozo.yu.edu/blockchain-project-reports/2> [<https://perma.cc/X4RP-ZJUD>].

<sup>35</sup> Hans, *supra* note 31.

<sup>36</sup> O’Shields, *supra* note 23, at 179.

<sup>37</sup> SMART CONT. ALL.—IN COLLABORATION WITH DELOITTE, SMART CONTRACTS: 12 USE CASES FOR BUSINESS & BEYOND 8 (2016) [hereinafter SMART CONT. ALL.].

<sup>38</sup> Olga Mack, *How Smart Contracts Will Change the World*, TEDXSANFRANCISCO, (Oct., 2018), [https://www.ted.com/talks/olga\\_mack\\_how\\_smart\\_contracts\\_will\\_change\\_the\\_world](https://www.ted.com/talks/olga_mack_how_smart_contracts_will_change_the_world).

<sup>39</sup> van der Linden, *supra* note 11, at 458 (“If you push a button and pay a specified amount of money, it gives you something in return . . .”).

<sup>40</sup> ROBERTS, *supra* note 24, at 88.

conditions.<sup>41</sup> The performance of each party is automated by a software program enforcing the obligations through an “if-then” format.<sup>42</sup>

Consider a simple example of two parties who use the Ethereum blockchain to place a wager on the outcome of a soccer game through a smart contract-based platform.<sup>43</sup> *If* either party bet on the winning team, *then* the prevailing party would be paid out.<sup>44</sup> To determine the outcome of the bet, the smart contract will consult a neutral third-party source to confirm who won the game.<sup>45</sup> The source, known as an “oracle,” would be a website like ESPN.<sup>46</sup> Once the smart contract consults the website at the end of the game, the wager is paid out to the winning party.<sup>47</sup> Here, the transaction is being automated on a self-executing basis with finality.<sup>48</sup>

Through blockchain, people may execute contracts for a wide range of transactions from investment agreements, to data storage, to gambling.<sup>49</sup> With Ethereum’s platform, users can build decentralized applications (Dapps) onto the blockchain where the smart contracts rest at the core to invoke functions within the Dapp.<sup>50</sup> The purpose of Ethereum is to serve “as a platform much like what Apple provides developers so they can build apps for its iOS operating system.”<sup>51</sup>

Nakamoto’s white paper introduced the concept of transacting on a peer-to-peer network where the need for trust is essentially eliminated when two parties are willing to transact with one another without a trusted third party.<sup>52</sup> Ethereum took blockchain technology another step further and introduced

---

<sup>41</sup> Pratin Vallabhaneni, *The Rise of NFTs—Opportunities and Legal Issues*, WHITE & CASE (Apr. 20, 2021), <https://www.whitecase.com/publications/alert/rise-nfts-opportunities-and-legal-issues#:~:text=Smart%20contracts%20are%20open%2Dsources,under%20certain%20terms%20and%20conditions> [https://perma.cc/S2DZ-NPQE].

<sup>42</sup> McCarthy, *supra* note 30, at 14.

<sup>43</sup> ROBERTS, *supra* note 24, at 89.

<sup>44</sup> *Id.*

<sup>45</sup> *Id.*

<sup>46</sup> *Id.*; van der Linden, *supra* note 11, at 459 (describing what an “oracle” is through the example of a mother wishing to transfer money to her son on his 18<sup>th</sup> birthday if a specific condition is met through a verifiable source).

<sup>47</sup> ROBERTS, *supra* note 24, at 89.

<sup>48</sup> SMART CONT. ALL., *supra* note 37, at 3.

<sup>49</sup> ROBERTS, *supra* note 24, at 89.

<sup>50</sup> Mack, *supra* note 38, at 6:13.

<sup>51</sup> ROBERTS, *supra* note 24, at 89.

<sup>52</sup> NAKAMOTO, *supra* note 25, at 1.

this use of smart contracts.<sup>53</sup> These pieces of software automatically implement the agreed-upon terms between multiple parties in a manner which the parties can trust will execute automatically per their predetermined conditions, with a reduced risk of manipulation or error.<sup>54</sup>

Mentions of smart contracts often follow a crazed discussion of the infamous NFT, or non-fungible token, which designates ownership of a particular asset.<sup>55</sup> NFTs are generally tied to some digital content file and governed by a smart contract issued on a public blockchain network.<sup>56</sup> While NFTs have become a trendy topic and opinions differ vastly about their utility, the underlying self-executing code of the smart contract has proven to create limitless potential.<sup>57</sup>

For example, a smart contract attached to an NFT can include a code that permits artists, or creators of these works, implement a royalty percentage where subsequent sales or auctions of the NFT can generate a stream of revenue for the original creator each time the work is transferred.<sup>58</sup> For the art world, utility of this technology is found by providing artists with a rare opportunity to be compensated for every new sale of their works.<sup>59</sup>

Contrast the use of a public-blockchain network for trading something like an NFT or cryptocurrency, to the use of a private-blockchain network that would be more beneficial to businesses.<sup>60</sup> Businesses with a private

---

<sup>53</sup> Tsui S. Ng, *Blockchain and Beyond: Smart Contracts*, AM. BAR ASS'N (Sept. 28, 2017), [https://www.americanbar.org/groups/business\\_law/publications/blt/2017/09/09\\_ng/](https://www.americanbar.org/groups/business_law/publications/blt/2017/09/09_ng/).

<sup>54</sup> John Ream et al., *Upgrading Blockchains: Smart Contract Use Cases in Industry*, DELOITTE UNIV. PRESS (June 9, 2016), <https://www2.deloitte.com/us/en/insights/focus/signals-for-strategists/using-blockchain-for-smart-contracts.html> [<https://perma.cc/3QT8-UDNZ>].

<sup>55</sup> VISA, *NFT'S: ENGAGING TODAY'S FANS IN CRYPTO AND COMMERCE* 4.

<sup>56</sup> *Id.* at 4.

<sup>57</sup> BangBit Technologies, *The Power of Smart Contracts on The Blockchain: How Can Businesses Get the Advantage?*, MEDIUM (May 14, 2018), <https://medium.com/@BangBitTech/the-power-of-smart-contracts-on-the-blockchain-how-can-businesses-get-the-advantage-b8abd5086caf>.

<sup>58</sup> VISA, *supra* note 55, at 5.

<sup>59</sup> Robert Norton, *NFTs Have Changed the Art of the Possible*, WIRED (Feb. 14, 2022, 11:55 AM), <https://www.wired.co.uk/article/nft-art-world#:~:text=Artists%2C%20engineers%2C%20collectors%2C%20and,of%20the%20World%20Wide%20Web> [<https://perma.cc/55ER-EVGG>].

<sup>60</sup> Praveen Jayachandran, *The Difference Between Public and Private Blockchain*, IBM SUPPLY CHAIN AND BLOCKCHAIN BLOG (May 31, 2017), <https://www.ibm.com/blogs/>  
(continued)

blockchain will generally set up a “permissioned” network.<sup>61</sup> Verified members and parties working directly with each other are granted access to the network through an invitation which allows the party to play a role in maintaining the decentralization of the blockchain.<sup>62</sup>

With these business uses in mind, companies like Wal-Mart have been utilizing blockchain technology to manage their supply chain by issuing smart contracts which automatically activate when predetermined business conditions are met.<sup>63</sup> For Wal-Mart Canada’s seventy third-party freight carriers, their invoice discrepancies have decreased to less than 1% since employing an automated system for handling invoices and payments.<sup>64</sup> This is a massive improvement from the previous 70% of invoices disputed before Wal-Mart’s integration of a blockchain-based system.<sup>65</sup> Not only are the costs of mitigating disputes declining, but also more importantly, their carriers are able to be paid on time.<sup>66</sup>

Additionally, there are a range of use case applications for smart contracts.<sup>67</sup> For example, insurance claims may be automated through a calculated payout based on the type of claim and underlying policy.<sup>68</sup> In the healthcare field, electronic medical records could be accessed and transferred upon multi-signature approvals between patients and providers, as well as automatically issuing payments to patients who participate in health research.<sup>69</sup>

With these advancements in blockchain technology moving quickly, there has been immense discussion of using a form of decentralized justice or online dispute resolution in deciding the outcome of smart contract

---

blockchain/2017/05/the-difference-between-public-and-private-blockchain/  
[<https://perma.cc/AUV2-ZVNN>].

<sup>61</sup> *Id.*

<sup>62</sup> *Id.*

<sup>63</sup> Srishti Mukherjee, *How Walmart Uses Blockchain to Manage its Supply Chain*, ANALYTICS INDIA MAG. (Feb. 6, 2022), <https://analyticsindiamag.com/how-walmart-uses-blockchain-to-manage-its-supply-chain/> [<https://perma.cc/2ZEN-EGZ5>].

<sup>64</sup> *Id.*

<sup>65</sup> Kate Vitasek et al., *How Walmart Canada Uses Blockchain to Solve Supply-Chain Challenges*, HARV. BUS. REV. (Jan. 5, 2022), <https://hbr.org/2022/01/how-walmart-canada-uses-blockchain-to-solve-supply-chain-challenges> [<https://perma.cc/JH4Y-TY7U>].

<sup>66</sup> *Id.*; Mukherjee, *supra* note 63.

<sup>67</sup> Ream, *supra* note 54.

<sup>68</sup> *Id.*

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

transactions in the event of a breach.<sup>70</sup> By implementing a code, or a form of quality-control, into the smart contract, a dissatisfied party would be permitted to initiate on-chain dispute resolutions prior to contract completion.<sup>71</sup> Due to our current legal infrastructure, and the jurisdictional limitations existing within the system, it is necessary to consider blockchain-based solutions in preparation for disputes stemming from blockchain use.<sup>72</sup> If society is to progress in a digital world, our ability to dispute claims effectively should be vital in our development.

*C. How Long Must We Wait Until Legal Infrastructure Is Reconsidered?*

In the early 2000s, legal infrastructure, as defined by former General Counsel of the Department of the Treasury, Edward Knight, “is the entire system of rules, procedures and institutions that undergirds global financial activity.”<sup>73</sup> Over a decade later, Gillian F. Hadfield, a professor of law and economics at the University of Southern California, defined legal infrastructure as, “the socially available set of legal materials that economic actors can use to help govern relationships.”<sup>74</sup>

At the turn of the century, Knight inquired into the agenda of a legal infrastructure supported by the growing economy of the future of the twenty-first century.<sup>75</sup> With vast economic opportunities ahead, Knight argued three goals for an effective legal infrastructure: (1) to enhance transparency and predictability in financial transactions; (2) to limit the spread of financial crises and mitigate their impact on affected economies; and (3) to encourage the speedy and orderly resolution of disputes.<sup>76</sup> At the time his paper was published, Knight urged his reader for a timely consideration into the capacity to change and to respond to change in the legal infrastructure

---

<sup>70</sup> See Koulu, *supra* note 7, at 40; van der Linden, *supra* note 11, at 454–55; Metzger, *supra* note 14, at 70; Amy J. Schmitz & Colin Rule, *Online Dispute Resolution for Smart Contracts*, 2019 J. DISP. RESOL. 103, 105; Orna Rabinovich-Einy & Ethan Katsh, *Blockchain and the Inevitability of Disputes: The Role for Online Dispute Resolution*, 2019 J. DISP. RESOL. 54, 58.

<sup>71</sup> Michael Buchwald, *Smart Contract Dispute Resolution: The Inescapable Flaws of Blockchain-based Arbitration*, 168 UNIV. PA. L. REV. 1369, 1382 (2020).

<sup>72</sup> Wulf A. Kaal & Craig Calcaterra, *Crypto Transaction Dispute Resolution*, 73 BUS. LAW. 109, 113 (2017).

<sup>73</sup> Edward S. Knight, *Legal Infrastructure for the New Global Marketplace*, 34 INT’L LAW. 211, 212 (2000).

<sup>74</sup> Gillian F. Hadfield, *Legal Infrastructure and the New Economy*, 8 I/S: A J. OF LAW AND POL’Y FOR THE INFO. SOC’Y 1, 2 (2012).

<sup>75</sup> Knight, *supra* note 73, at 214.

<sup>76</sup> *Id.*

without compromising the fundamental principles of transparency, predictability, and equity.<sup>77</sup>

By 2012, e-commerce sales had surpassed \$1 trillion for the first time.<sup>78</sup> Hadfield recognized the vulnerabilities that still existed in the legal resources available to the rapidly expanding online economy.<sup>79</sup> Her paper argues that due to the increased size of global markets and the development of e-commerce, there is an economic demand for law that will support the creation of value in economic relationships.<sup>80</sup> She simply states, “our legal infrastructure . . . has not kept up with this transformation in the economic demand for law.”<sup>81</sup> She describes the new economy as, “web-enabled and globally-networked,” as well as “knowledge-based, transaction-driven, high velocity, highly fluid, highly differentiated, emergent,” and most importantly, “increasingly hard to predict.”<sup>82</sup>

Hadfield and Knight, like others who are optimistic and skeptical of future developments, would likely agree that the expansion and utilization of technologies are increasing in a way that leaves little room to forecast the magnitude of its impact. Yet, each author observes the American legal infrastructure, in the early 2000s and 2012, alongside the developing needs stemming from the beginning stages of a rapidly expanding digital economy.<sup>83</sup> Both conclude the legal infrastructure in place must support the increase of legal demand.<sup>84</sup> Ultimately, these observations can be accurately analyzed against the backdrop of the advancements taking place now, ten years later in 2022.<sup>85</sup>

---

<sup>77</sup> *Id.* at 221.

<sup>78</sup> Taylor Soper, *Worldwide E-commerce Sales Surpassed \$1 Trillion for First Time in 2012*, GEEKWIRE (Feb. 8, 2013, 10:18 AM), <https://www.geekwire.com/2013/worldwide-e-commerce-sales-surpassed-1-trillion-2012/>.

<sup>79</sup> See Hadfield, *supra* note 74, at 1.

<sup>80</sup> *Id.*

<sup>81</sup> *Id.*

<sup>82</sup> *Id.* at 6.

<sup>83</sup> *Id.* at 5; Knight, *supra* note 73, at 211–12.

<sup>84</sup> Hadfield, *supra* note 74, at 59; Knight, *supra* note 73, at 221 (“The ever-increasing volume and diversity of today’s capital flows make the rule of law and legal reform central to the effort of building a new global financial architecture.”).

<sup>85</sup> Hadfield, *supra* note 74, at 11 (“Transformations in the economy are transforming the economic demand for law by shifting the structure of economic relationships and, hence, the problems actors need to solve in order to achieve their private and public goals for economic cooperation and exchange.”).

A solution to the current inadequacies within the legal infrastructure may very well be blockchain-based. Knight's vision for the perfect legal infrastructure coincided with the ideals of Satoshi's bitcoin that emerged less than ten years after Knight's remarks.<sup>86</sup>

Although the blockchain database gives users absolute privacy, the list of transactions on the public blockchain is transparent and open to anyone with the public-key address.<sup>87</sup> The public-key (akin to public address) and the private-key (akin to a password) are given to users once they set up their account on a blockchain-based network.<sup>88</sup> To initiate a transaction, a user locates another user's public-key and inputs their own private-key, thus finalizing the deal through a "digital signature."<sup>89</sup> The system is predictable because the users can be assured their data is being confidentially stored and can trust the accuracy and value of any transaction.<sup>90</sup>

As encouragement to utilize smart contracts for various transactions increases, disputes within those systems increase as well.<sup>91</sup> These disputes will inevitably arise and a need for effective, accurate, and efficient conflict resolution in the crypto economy increases proportionally.

### III. WHAT IS DECENTRALIZED JUSTICE?

As humans, we have an innate desire to decrease any sense of uncertainty between one another.<sup>92</sup> Throughout human history, hunter-gatherers would only trade within their village structure and the trade was enforced through means of violence or social repercussions.<sup>93</sup> As society developed and trade spanned further than before, formal institutions such as banks, governments, and corporations were established to help manage trade when uncertainty in transactions grew and our personal control over the transactions decreased.<sup>94</sup> Eventually, with the inception of the Internet, we

---

<sup>86</sup> Alan Feuer, *The Bitcoin Ideology*, N.Y. TIMES (Dec. 14, 2013), <https://www.nytimes.com/2013/12/15/sunday-review/the-bitcoin-ideology.html>.

<sup>87</sup> Kaal & Calcaterra, *supra* note 72, at 111.

<sup>88</sup> WRIGHT ET AL., *supra* note 34, at 2.

<sup>89</sup> *Id.*

<sup>90</sup> Kaal & Calcaterra, *supra* note 72, at 112.

<sup>91</sup> *Id.* at 144.

<sup>92</sup> Bettina Warburg, *How the Blockchain Will Radically Transform the Economy*, TED, at 1:00 (June 2016), [https://www.ted.com/talks/bettina\\_warburg\\_how\\_the\\_blockchain\\_will\\_radically\\_transform\\_the\\_economy/transcript?language=so](https://www.ted.com/talks/bettina_warburg_how_the_blockchain_will_radically_transform_the_economy/transcript?language=so) [<https://perma.cc/DR3G-6RCG>].

<sup>93</sup> *Id.* at 2:08.

<sup>94</sup> *Id.* at 2:24.

simply moved these institutions (Amazon, Marketplaces, etc.) online where they act as middlemen to facilitate transactions.<sup>95</sup>

Traditional, centralized networks require users to trust a central third-party intermediary that will accurately confirm and execute valid transactions.<sup>96</sup> For example, a person filing a claim with a court can trust the system will accurately record and relay their information. They also trust the court system will execute a valid resolution to their issue.

To contrast, in a decentralized network, transaction records are duplicated, distributed, and verified across an entire network of computers, which eliminates the need for trust in a centralized entity.<sup>97</sup> In the case of a court filing, a decentralized system would enable parties to begin arbitration as soon as a breach occurs. In theory, the parties can trust all of the evidence was stored onto the blockchain network and a random set of distributed jurors will decide on the correct outcome based off the evidence submitted. Thus, the term “decentralized justice” simply means reaching a fair outcome without having to rely on a court system for judgment.

#### A. *Online Dispute Resolution and Its Future*

The concept of ODR has been around since the early 1990s, when it became clear how often disputes would arise through basic Internet usage, like downloading music or buying and selling items online.<sup>98</sup> Historically, dispute resolution has been accomplished through face-to-face communications to allow for a candid expression of each party’s concerns.<sup>99</sup> However, as society has become reliant upon the various technological advancements in our means of communications,<sup>100</sup> the nature of current software developments allow for the organization of information to be

---

<sup>95</sup> *Id.* at 5:27.

<sup>96</sup> Evan Miller, *A Tale of Two Regulators: Antitrust Implications of Progressive Decentralization in Blockchain Platforms*, 77 WASH. & LEE L. REV. ONLINE 387, 390 (2021).

<sup>97</sup> *Id.*

<sup>98</sup> ETHAN KATSH, ODR: A LOOK AT HISTORY—A FEW THOUGHTS ABOUT THE PRESENT AND SOME SPECULATION ABOUT THE FUTURE 21 (2013), available at <http://www.ombuds.org/odrbook/katsh.pdf> [<https://perma.cc/J7JX-NYQY>].

<sup>99</sup> *Id.*

<sup>100</sup> Colleen McClain et al., *How the Internet and Technology Shaped American’s Personal Experiences Amid COVID-19*, PEW RSCH. CTR. (Sept. 1, 2021), <https://www.pewresearch.org/internet/2021/09/01/how-the-internet-and-technology-shaped-americans-personal-experiences-amid-covid-19> [<https://perma.cc/F7LM-Q27Z>] (describing the impact of COVID-19 and how technology bridged physical distance through applications like Zoom and remote work).

utilized in a manner which leads to an agreement between disputing parties without ever meeting one another.<sup>101</sup>

For example, in the early 2000s, eBay was in the midst of a surge of online consumers and began implementing a form of ODR as an option for buyers and sellers in the event a transaction failed.<sup>102</sup> By 2010, eBay settled sixty million disputes<sup>103</sup> through gathering basic information about the claim via email, while a trained mediator facilitated the online communications.<sup>104</sup>

While eBay's use of ODR proved effective in resolving disputes between unknown users, these resolutions can go further with the combination of blockchain-based technology. As opposed to the manual solicitation of evidence by eBay arbitrators, the blockchain ledger should already have a record of what occurred on the blockchain.<sup>105</sup> This can be crucial in proving the right outcome to a dispute. However, whether the blockchain is a public or private network would determine the validity of the truthfulness of a ledger.<sup>106</sup>

Nevertheless, businesses that do wish to explore their options with smart contracts should consider implementing dispute resolution mechanisms into their original agreements. For instance, in order to record the evidence of the final version of a contract, there is an initiative to store the hash (randomized string of numbers and letters) of the traditional contract into the smart contract, while including a form of ODR with human arbitrators.<sup>107</sup> This would ensure some form of ODR is triggered as soon as a condition is unfulfilled by the contracting parties within the smart contract.

As transactions on the blockchain become much more complex than merely bidding online for a rare poster or baseball card, a more advanced system of dispute resolution is necessary for the expansion of a robust digital economy. In fact, several start-up companies have already taken notice to

---

<sup>101</sup> KATSH, *supra* note 98, at 21.

<sup>102</sup> *Id.* at 27.

<sup>103</sup> *Id.*

<sup>104</sup> Ethan Katsh et al., *E-Commerce, E-Disputes, and E-Dispute Resolution: In the Shadow of "eBay Law"*, 15 OHIO ST. J. ON DISP. RESOL. 705, 707 (2000).

<sup>105</sup> van der Linden, *supra* note 11, at 466.

<sup>106</sup> *Id.* ("A private . . . blockchain where only one or a few peers validate transactions, and which is not secured by a consensus mechanism specifically intended to prevent tinkering (such as proof of work), will not deserve the same amount of trust in the truthfulness of the ledger as a completely public blockchain will.")

<sup>107</sup> *Id.* at 467.

this blockchain necessity.<sup>108</sup> These platforms all share a similar objective to provide reasonable and cost-efficient resolutions to disputes that arise out of smart contracts implemented into the blockchain, all while maintaining the decentralized nature of the technology through the removal of a centralized entity, like a court.<sup>109</sup> Though this Comment focuses on one particular start-up company innovating in this space, the idea is the parties in a dispute will rely upon an arbitration clause linked to the smart contract to have independent jurors decide the outcome of their case.<sup>110</sup>

*B. A Company Looking Ahead—Kleros*

Kleros is an open-source online dispute resolution protocol which uses blockchain and crowdsourcing to accurately and fairly adjudicate disputes.<sup>111</sup> Any user may apply for a position as a juror and they are incentivized through payment of their respective coin or penalized for voting with the minority.<sup>112</sup> It is a decentralized application built on top of Ethereum that works as a decentralized third party to arbitrate disputes in simple and complex contracts through game theory incentive to have jurors rule correctly in cases.<sup>113</sup>

In Greek, the name “Kleros” means *randomness*.<sup>114</sup> The company took the famous game theory idea of a Schelling Point, by Thomas Schelling,<sup>115</sup>

---

<sup>108</sup> See generally JUR, <https://jur.io> [<https://perma.cc/ZC39-BGNA>]; Adam J. Kerpelman, *A Non-Technical Overview of the Juris Dispute Resolution System*, JURIS (Mar. 20, 2018), <https://jurisproject.io>; ARAGON, <https://aragon.org/network>; DELPHI, <https://delphi.systems> [<https://perma.cc/8N58-J8EF>]; RHUBARB, <https://www.rhucoin.com> [<https://perma.cc/N8RU-GPC6>]; JURY ONLINE, <https://jury.online> [<https://perma.cc/VD5Y-V8SP>]; and Open Law, *OpenCourt: Legally Enforceable Blockchain-Based Arbitration*, CONCENSYS MEDIA (Oct. 18, 2018), <https://media.consensys.net/opencourt-legally-enforceable-blockchain-based-arbitration-3d7147dbb56f> [<https://perma.cc/A4TW-5TX2>].

<sup>109</sup> Metzger, *supra* note 14, at 70.

<sup>110</sup> van der Linden, *supra* note 11, at 467.

<sup>111</sup> Clément Lesaege et al., *Kleros Short Paper v1.0.7*, at 1 (Sept. 2019), available at <https://kleros.io/whitepaper.pdf> [<https://perma.cc/45RZ-GELN>].

<sup>112</sup> van der Linden, *supra* note 11, at 467.

<sup>113</sup> Lesaege et al., *supra* note 111.

<sup>114</sup> KLEROS.IO, DISPUTE REVOLUTION: THE KLEROS HANDBOOK OF DECENTRALIZED JUSTICE 26 (2020), available at <https://ipfs.kleros.io/ipfs/QmZeV32S2VoyUnqJsRRCh75F1fP2AeomVq2Ury2fTt9V4z/Dispute-Resolution-Kleros.pdf> [<https://perma.cc/MJ7B-XQAL>].

<sup>115</sup> Presh Talwalkar, *Focal Points (or Schelling Points): How We Naturally Organize in Games of Coordination*, MIND YOUR DECISIONS (Apr. 1, 2008), (continued)

to demonstrate how a network of peers could reach the correct result of a dispute.<sup>116</sup> The concept is as follows: if you were to meet a stranger in New York City, with no time or place specified, the most common answer is to meet at *noon at Grand Central Terminal* because its tradition as a meeting place makes it a natural focal point.<sup>117</sup> Schelling himself suggested people can usually predict the intention of others because most situations have some “focal point for each person’s expectation of what the other expects him to expect to be expected to do.”<sup>118</sup>

In order for Kleros to be the arbitrator of a dispute, it must be designated in the “real-world” contract and include a cryptographic commitment to that contract in an Ethereum smart contract.<sup>119</sup> Once parties opt-in to the Kleros service, they are able to choose the type of court who will rule on their contract and the amount of jurors that will be selected in the event of a dispute.<sup>120</sup> As decentralization would allow for more autonomy, parties would seemingly choose a type of court specializing in the topic of their contract.<sup>121</sup> For example, a contract for the development of software would choose a software development court and an insurance contract would select an insurance court.<sup>122</sup>

To pique the interest of jurors, Kleros utilizes an economic incentive by collecting arbitration fees in exchange for the work of jurors.<sup>123</sup> Jurors are randomly selected for a specific dispute based on the proportional amount of pinakion token (PNK) staked.<sup>124</sup> The more PNK a user has staked, the more likely it is they will be drawn to decide a dispute.<sup>125</sup> This prevents inactive jurors from being selected, as well as increasing the pockets of voluntary jurors.<sup>126</sup> More importantly, the use of PNK incentivizes jurors to

---

<https://mindyourdecisions.com/blog/2008/04/01/focal-points-or-schelling-points-how-we-naturally-organize-in-games-of-coordination/> [https://perma.cc/952R-763T].

<sup>116</sup> Metzger, *supra* note 14, at 71.

<sup>117</sup> *See id.*

<sup>118</sup> *Schelling’s Point and the Search for Extraterrestrial Intelligence*, CORNELL UNIV. COURSE BLOG (Sept. 18, 2018), <https://blogs.cornell.edu/info2040/2018/09/18/schellings-point-and-the-search-for-extraterrestrial-intelligence/> [https://perma.cc/3PDU-UMUM].

<sup>119</sup> Metzger, *supra* note 14, at 70.

<sup>120</sup> Lesaege et al., *supra* note 111, at 3.

<sup>121</sup> *Id.*

<sup>122</sup> *Id.*

<sup>123</sup> *Id.* at 4.

<sup>124</sup> *Id.*

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

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

vote honestly, based on the focal point.<sup>127</sup> Otherwise, jurors who vote against the ultimate ruling pay part of their stake to those that voted with the ruling.<sup>128</sup>

To compensate jurors for their work, arbitration fees must be required.<sup>129</sup> In first time instances, “each party will deposit an amount equal to the arbitration fee in the smart contract.”<sup>130</sup> If one party fails to do this, the smart contract will assume the court ruled in favor of the party who did deposit the fee.<sup>131</sup> “If both parties deposit the funds, the winning party will be reimbursed when the dispute is over.”<sup>132</sup>

In the case of an appeal, both parties deposit the arbitration fees.<sup>133</sup> However, the appellant must deposit “an extra stake proportional to the appeal fees which will be given to the winning party.”<sup>134</sup> In the event any party makes frivolous claims to harm the opposing party, a compensation will be paid out for lost time.<sup>135</sup> If the appeals are legitimate, the stake will be returned to appellant.<sup>136</sup> For those concerned about a never-ending appeal process, a dissatisfied party may appeal and have the dispute ruled again.<sup>137</sup> However, each new appeal “will have twice the previous number of jurors, plus one.”<sup>138</sup> Thus, arbitration fees being paid to a number of jurors rises with the number of appeals and parties are less likely to appeal numerous times.<sup>139</sup>

Kleros claims to help millions achieve access to justice by enabling arbitration in a large number of contracts that are too costly to pursue in court.<sup>140</sup> Through their use of game theory and block-chain based arbitration that supports applications in e-commerce, finance, travel, international trade,

---

<sup>127</sup> *Id.*

<sup>128</sup> *Id.*

<sup>129</sup> *Id.* at 6.

<sup>130</sup> *Id.* at 7.

<sup>131</sup> *Id.*

<sup>132</sup> *Id.*

<sup>133</sup> *Id.*

<sup>134</sup> *Id.*

<sup>135</sup> *Id.*

<sup>136</sup> *Id.*

<sup>137</sup> *Id.*

<sup>138</sup> *Id.*

<sup>139</sup> *Id.*

<sup>140</sup> *Id.* at 15.

consumer protection, and intellectual property amongst a vast array of uses, Kleros has the potential to bring “justice for the unjusticed.”<sup>141</sup>

*C. Ongoing Developments in the Global and Domestic Use of Blockchain-Based Systems*

It is not surprising that the United States is being outpaced by several countries in terms of technological advancements.<sup>142</sup> As far back as fifty years ago, the United States Supreme Court acknowledged that jurisdictional jurisprudence must evolve alongside technological developments: “As technological progress has increased the flow of commerce between States, the need for jurisdiction over nonresidents has undergone a similar increase.”<sup>143</sup> Yet, as the Fourth Industrial Revolution nears,<sup>144</sup> the U.S. remains stagnant, while other countries are adopting favorable policies encouraging innovation and creating space for future developments.

*1. China and Blockchain*

For nearly a decade, China has been experimenting with and fully utilizing Internet judicial practices within the Chinese government.<sup>145</sup> In January of 2021, the Report of the Guangdong Government included a profound statement by the Governor of the Guangdong Province, which stated the goals of a technology-focused government:

We will speed up the pace of constructing a national innovation-driven development pilot zone for digital economy and facilitate an in-depth integration of the digital economy with the real economy. We will reinforce the edges of digital industries and prosper artificial intelligence, big data, blockchain and Internet of Things.<sup>146</sup>

---

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

<sup>142</sup> Gary Shapiro, *The U.S Risks Being Outpaced on Innovation Within the Next Ten Years*, VENTUREBEAT (Feb. 7, 2019, 2:10 PM), <https://venturebeat.com/business/the-u-s-risks-being-outpaced-on-innovation-within-the-next-10-years/> [https://perma.cc/34TP-GY2D].

<sup>143</sup> *Hanson v. Denckla*, 357 U.S. 235, 250–51 (1958).

<sup>144</sup> Klaus Schwab, *The Fourth Industrial Revolution*, WORLD ECON. F. (2016), <https://www.weforum.org/about/the-fourth-industrial-revolution-by-klaus-schwab> [https://perma.cc/T3CA-98ZC].

<sup>145</sup> MA XINGRUI, REPORT ON THE WORK OF THE GUANGDONG GOVERNMENT, No. 6939748, (4th Sess. of the 13th Guangdong Provincial People’s Congress, Jan. 24, 2021) (China), [http://www.gd.gov.cn/gkmlpt/content/3/3185/post\\_3185894.html#45](http://www.gd.gov.cn/gkmlpt/content/3/3185/post_3185894.html#45) [https://perma.cc/YNR8-CH2L].

<sup>146</sup> *Id.*

Just as promised, eleven months later, the China Supreme Court issued a white paper titled, “Chinese Courts and Internet Judiciary.”<sup>147</sup> The white paper thoroughly explains China’s past and future efforts in developing governance alongside the fast-paced technologies.<sup>148</sup>

In 2013, China established four separate websites to experiment with Internet judicial practices through an exploration of new approaches and models of integrating Internet technologies into trial procedures and the judicial system.<sup>149</sup> By 2019, they developed a “Smart Court System,” which offered whole-process (ODR services—mediation, case-filing, fee-payment, hearings, e-delivery) transparent and intelligent online services to the public in accordance with the law.<sup>150</sup> China’s objective was to shift litigation models from something appearing linear and isolated, to a more open-access and intelligent model by implementing blockchain networks.<sup>151</sup> That model was to:

[Introduce] new technologies like big data, cloud computing, blockchain and artificial intelligence, the application of modules such as voice recognition in hearings, digitalized evidence presentation, automatic document verification, and simultaneous generation of e-files, intelligence-assisted case handling, and case management [which] are all included in the toolkits for the judiciary.<sup>152</sup>

Interestingly enough, these courts have designated jurisdiction over purely Internet-related disputes, like contracts for financial loans, purchased goods, services, and online torts disputes, such as copyright infringement.<sup>153</sup> They are even well on their way of creating a solid base of reliable precedent in these online disputes.<sup>154</sup>

The Hangzhou Internet Court, Beijing Internet Court, and Guangzhou Internet Court accepted almost 119,000 Internet-related cases and settled over 88,000.<sup>155</sup> The rate of online filing (i.e., the lawsuits filed via the

---

<sup>147</sup> See generally CHINESE COURTS AND INTERNET JUDICIARY (Dec. 5, 2019) (China) (bilingual version), <https://english.court.gov.cn/pdf/ChineseCourtsandInternetJudiciary.pdf> [<https://perma.cc/285L-SA89>].

<sup>148</sup> *Id.* at 58–59.

<sup>149</sup> *Id.* at 60.

<sup>150</sup> *Id.* at 61.

<sup>151</sup> *Id.* at 61–62.

<sup>152</sup> *Id.* at 62.

<sup>153</sup> *Id.* at 63.

<sup>154</sup> *Id.* at 63–64.

<sup>155</sup> *Id.* at 64.

Internet) was 96.8%, and nearly 81,000 of the cases were proceeded through an online dispute resolution process.<sup>156</sup>

Compared with the case handling before implementing the Internet judiciary, on average, it took forty-five minutes in an online hearing and thirty-eight days in a traditional hearing.<sup>157</sup> “Up to 98% of the parties accepted first-instance judgments and ceased further appeals.”<sup>158</sup>

Lastly, the official website of the Hangzhou Internet Court provides 24/7 access and services to its users.<sup>159</sup> This allows parties to file a lawsuit on their own time and to pay litigation fees online.<sup>160</sup> After filing, parties can check for updates on its progress and upload any information or electronic evidence onto the platform, which is also a mobile phone application.<sup>161</sup>

## 2. *Wyoming and Blockchain*

Although America’s federal judicial system may be dragging their feet on renovations, states like Wyoming are not missing a beat. Despite Wyoming’s rugged history with depletable resources (i.e., coal and fossil fuels), it is looking to blockchain and crypto as a promising means for economic expansion.<sup>162</sup> Like others who saw the potential for individualism, Wyoming resonates with the philosophy of blockchain and its independent nature to allow users control over their own transactions.<sup>163</sup>

Wyoming leads the nation in enacting multiple blockchain and crypto laws.<sup>164</sup> They have been successful in passing more than a dozen blockchain-focused laws in an effort to develop policy around blockchain and clarify the legal status of digital assets.<sup>165</sup>

---

<sup>156</sup> *Id.*

<sup>157</sup> *Id.*

<sup>158</sup> *Id.*

<sup>159</sup> Yang Lin, *China’s Three Internet Courts*, 2 *AMICUS CURIAE* 531, 533 (2021).

<sup>160</sup> *Id.*

<sup>161</sup> *Id.* at 533–35.

<sup>162</sup> Bloomberg Originals, *This Western State Wants to Be America’s Crypto Capital*, YOUTUBE, at 1:11 (Feb. 2, 2022), <https://www.youtube.com/watch?v=UIDoZSUF5WM&list=PLcdh4H8TcAChI2JovLbHpESFTNwFncQIN&index=1> [https://perma.cc/3M8F-R42Q].

<sup>163</sup> *Id.* at 1:50.

<sup>164</sup> *Id.* at 2:57.

<sup>165</sup> *Id.* at 4:20.

House Bill 62<sup>166</sup> (H.B. 62) created a framework for cryptocurrency token sales in the state to be classified as utility tokens<sup>167</sup> when they comply with conditions, like: registering tokens with the state; not classifying them as an investment vehicle; and treating them as a good or service that could be exchanged.<sup>168</sup> In doing this, H.B. 62 has essentially defined the digital assets as property, to ensure the law was compatible with the way the technology was actually working.<sup>169</sup>

Additionally, under H.B. 74,<sup>170</sup> companies working with digital assets may apply to become special purpose depository institutions (SPDI).<sup>171</sup> SPDIs are a type of bank that are required to hold all assets deposited with them, as opposed to a traditional bank who lends out its customer's money and holds less in reserve than the customer initially deposited.<sup>172</sup> This allows companies working within the cryptocurrency industry to trust a bank will have the regulations in place to hold onto digital assets and funds, while providing banking services.<sup>173</sup>

Furthermore, two more bills, H.B. 57<sup>174</sup> and H.B. 27,<sup>175</sup> establish a foundation for the future of innovation within Wyoming. H.B. 57 creates a financial technology sandbox for the testing of financial products and services within the state.<sup>176</sup> Just like Knight and Hadfield's argument for new legal infrastructure, the Wyoming bill explicitly recognizes how the existing legal frameworks are restricting technological innovation because

---

<sup>166</sup> H.R. 62, 65th Leg., Gen. Sess. (Wyo. 2019).

<sup>167</sup> *Utility Token*, CRYPTOPEDIA, <https://www.gemini.com/cryptopedia/glossary#utility-token> [<https://perma.cc/KBY3-DR9B>] (“A utility token is a tokenized digital asset designed to grant its holder access to the products or services of a blockchain protocol. As a result, utility tokens are intended to be used within the blockchain's network, rather than serve as an investment. However, given that most utility tokens fluctuate in value in accordance with its network's perceived popularity and adoption, many traders and crypto enthusiasts nonetheless purchase certain utility tokens as speculative investments.”).

<sup>168</sup> *Wyoming Laws Regulating Blockchain Businesses*, CRYPTOPEDIA (Dec. 7, 2021), <https://www.gemini.com/cryptopedia/wyoming-blockchain-bill-law> [<https://perma.cc/C3UP-8YTW>].

<sup>169</sup> Wyo. H.R. 62 § 1(a)(iv).

<sup>170</sup> H.R. 74, 65th Leg., Gen. Sess. (Wyo. 2019).

<sup>171</sup> *Wyoming Laws Regulating Blockchain Businesses*, *supra* note 168.

<sup>172</sup> *Id.*

<sup>173</sup> *See id.*

<sup>174</sup> H.R. 57, 65th Leg., Gen. Sess. (Wyo. 2019).

<sup>175</sup> H.R. 27, 65th Leg., Budget Sess. (Wyo. 2020).

<sup>176</sup> *Wyoming Laws Regulating Blockchain Businesses*, *supra* note 168.

the frameworks were largely established when technology was not a fundamental component of financial products and services.<sup>177</sup> Thus, the bill has been implemented in order to give financial technology innovators a flexible regulatory sandbox to encourage product-development by issuing waivers of specified statutes and rules.<sup>178</sup>

To continue their efforts forward, H.B. 27 was introduced to create a select committee on blockchain, financial technology, and digital innovation technology.<sup>179</sup> Their purpose is to develop knowledge and expertise within these areas, while developing legislation as necessary to promote the utilization of these technologies.<sup>180</sup>

Although China and Wyoming are worlds away from one another, their governments are collectively moving toward a common goal: clearing the room to make way for technologies that have barely reached their full potential yet. China's Internet judiciary system may illicit skepticism due to privacy concerns, however, when looking at their system by itself, it stands to reason adjudicating minor (or large) disputes over a few clicks on a smart phone without the hassle of attorneys and courts could very well be within reach.<sup>181</sup> As Wyoming paves the way for states to recognize the opportunity and possibility of welcoming blockchain-friendly businesses (and finally considering their own legal infrastructure),<sup>182</sup> there is hope that the United States will not be too far behind in the blockchain field once these systems are more prevalent in daily life. As for now, Kleros is only a few clicks away from being implemented into your next smart contract . . . just in case.

#### IV. WHAT ARE THE RISKS?

The discussions around blockchain have generated an endless number of opinions, hype, skepticism, disdain, frustration . . . the list goes on. Due to the many moving parts and layers to blockchain technology, the risks associated with the technology itself, smart contracts, and decentralized justice will be discussed independently of one another.

---

<sup>177</sup> Wyo. H.R. 57 § 1(a)(ii).

<sup>178</sup> *Id.* § 1(a)(iii).

<sup>179</sup> Wyo. H.R. 27.

<sup>180</sup> *Id.* § 1(b)(i)–(ii).

<sup>181</sup> Jason Tashea, *How the U.S. Can Compete with China on Digital Justice Technology*, BROOKINGS (Oct. 25, 2021), <https://www.brookings.edu/techstream/how-the-u-s-can-compete-with-china-on-digital-justice-technology/>.

<sup>182</sup> Caitlin Long, *What Do Wyoming's 13 New Blockchain Laws Mean?*, FORBES (Mar. 4, 2019, 7:29 AM), <https://www.forbes.com/sites/caitlinlong/2019/03/04/what-do-wyomings-new-blockchain-laws-mean/?sh=7bbc86405fde>.

*A. Blockchain Technology*

There is a large elephant in the room when discussing blockchain: the real impact of climate change and carbon footprint left behind. As cryptocurrencies are saturating the blockchain, they are built on a system called “proof of work.”<sup>183</sup> It acts as a security system for cryptocurrencies because there is no third party overseeing the transaction.<sup>184</sup>

The process of adding a block to the chain is incredibly energy-consuming.<sup>185</sup> To successfully add a block, Bitcoin miners compete to solve very complex math equations that require the use of expensive computers and enormous amounts of energy to output.<sup>186</sup> Miners compete for a successfully added block because they can receive a generous amount of cryptocurrency in return.<sup>187</sup>

One way for cryptocurrencies to become more energy efficient, is to shift from the “proof of work” model to a “proof stake” model.<sup>188</sup> While the former encourages the computers to compete against one another in a race to win coins, the later does not require competition and energy use may be dramatically decreased.<sup>189</sup>

Another question: is it really trustless? A transaction is comprised of three trusted elements: the counterparty, the intermediary, and the dispute resolution mechanism.<sup>190</sup> The blockchain attempts to replace all three elements with computer code by reducing humans to a digital key.<sup>191</sup> Yet, most people still have to trust some form of intermediary (like Coinbase or Ethereum) because the complexities of the blockchain are not commonly known.<sup>192</sup>

---

<sup>183</sup> Justine Calma, *The Climate Controversy Swirling Around NFTs*, THE VERGE (May 15, 2021, 9:51 AM), <https://www.theverge.com/2021/3/15/22328203/nft-cryptoart-ethereum-blockchain-climate-change> [https://perma.cc/XRV9-9JTY].

<sup>184</sup> *Id.*

<sup>185</sup> *Id.*

<sup>186</sup> Brian Baker, *What Is Bitcoin Mining and How Does It Work?*, BANKRATE (Sept. 27, 2022), <https://www.bankrate.com/investing/what-is-bitcoin-mining/> [https://perma.cc/PM6J-KF5W].

<sup>187</sup> *Id.*

<sup>188</sup> Calma, *supra* note 183.

<sup>189</sup> *Id.*

<sup>190</sup> Andres Guadamuz, *Trust, Decentralization, and the Blockchain*, JOTWELL: THE J. OF THINGS WE LIKE (Dec. 12, 2019), <https://cyber.jotwell.com/trust-decentralization-and-the-blockchain/> [https://perma.cc/8SXZ-C5D3].

<sup>191</sup> *Id.*

<sup>192</sup> *Id.*

Additionally, once a Decentralized Authority Organization (DAO) was hacked, the developers were able to fork (split) the blockchain code, despite a trustless decentralized system never allowing this.<sup>193</sup> Once that had been done, the history of that blockchain can never be the same again, as an entire new version of blockchain gets created.<sup>194</sup> Had there not been a trusted blockchain developer and intermediary, the decentralized system would not have prevented the hack.

*B. Smart Contracts*

One of the more common questions surrounding smart contracts are whether they are legally enforceable under contract law in the United States.<sup>195</sup> Under the Uniform Commercial Code (UCC), contracts generally must be in writing and signed to be enforceable, unless an exception applies.<sup>196</sup> Here, the smart contract is a piece of computer code and the UCC identifies any reduction of writing to tangible form as sufficient.<sup>197</sup> As for the signature requirement, the Electronic Signatures in Global National Commerce Act (E-SIGN Act) and state laws modeled on the Uniform Electronic Transactions Act (UETA), electronic records cannot be denied legal effect solely because of their electronic form.<sup>198</sup> Thus, there is sound basis for the enforceability of smart contracts.

Another consideration is liability.<sup>199</sup> While it may be clear oftentimes when the developer of the smart contract's code is liable, it is likely that the open-source nature of the blockchain will give little insight into how developer's code is used, or by whom.<sup>200</sup>

When it comes to amending and terminating a smart contract, it is not as easy as in the traditional contracting sense.<sup>201</sup> Since the purpose of a blockchain is to be immutable, the modification of a smart contract may cost exponentially more than amending a traditional contract.<sup>202</sup> While it appears smart contracts cannot be terminated because they lack self-help remedies,<sup>203</sup> this risk may be mitigated through companies like Kleros.

---

<sup>193</sup> *Id.*

<sup>194</sup> *Id.*

<sup>195</sup> Levi et al., *supra* note 13, at 156.

<sup>196</sup> *Id.* at 156–57.

<sup>197</sup> *Id.* at 157.

<sup>198</sup> *Id.* at 158.

<sup>199</sup> *Id.* at 162.

<sup>200</sup> *Id.*

<sup>201</sup> *Id.* at 164.

<sup>202</sup> *Id.*

<sup>203</sup> *Id.*

Lastly, smart contracts may be employed by users all over the world. This leads to an issue of governing law and venue.<sup>204</sup> However, like a traditional contract, a party offering terms under a smart contract may simply state the governing law and venue for such contract within the contract, bypassing venue and jurisdiction concerns.<sup>205</sup> Again, this becomes an issue where a company like Kleros may be utilized to arbitrate the dispute.

### C. *Decentralized Justice*

An impending issue with a form of decentralized justice is ensuring the outcome is actually fair and just. Especially when the shared responsibilities across the network leave the users at fault for funds and assets.<sup>206</sup> These “trustless” systems would have to find a way to prevent as much human error as possible.<sup>207</sup>

In terms of a decentralized justice system, there are several issues. First, parties may begin to request for jurors of the highest expertise in a particular category of dispute resolution.<sup>208</sup> Second, without this higher expertise, users may lose trust in the system’s effectiveness.<sup>209</sup> Lastly, these systems do not leave much room for intervention from attorneys.<sup>210</sup> This may cause a disruption in the workforce as more things become automated.

## V. CONCLUSION

By defining the scope of blockchain technology and illustrating the functions of smart contracts, an inference can be drawn in the observation of our current legal infrastructure that begs the system to change alongside the developing technology. Today, if an incident occurs and a party wishes to file a claim, such party is limited to filing in a centralized court system or some other entity controlled by its own developer.

As our society continues to grow in unprecedented digital ways, a more decentralized form of dispute resolution is necessary to support the growth of technology. While ODR has shown to be effective in resolving disputes, it is crucial to consider its mechanisms within the context of blockchain and smart contracts as more disputes are likely to derive therefrom.

---

<sup>204</sup> *Id.* at 165.

<sup>205</sup> *Id.*

<sup>206</sup> Gwentyth Iredale, *Pros and Cons of Decentralized Finance (DeFi)*, 101 BLOCKCHAINS (July 14, 2021), <https://101blockchains.com/pros-and-cons-of-decentralized-finance/> [https://perma.cc/LA52-GL8T].

<sup>207</sup> *Id.*

<sup>208</sup> Kaal & Calcaterra, *supra* note 72, at 147.

<sup>209</sup> *Id.*

<sup>210</sup> *Id.*

Leading the way in this combination of ODR and blockchain-based technologies are countries like China, states like Wyoming, and companies like Kleros.<sup>211</sup> While there may be hesitation to follow in the footsteps of China, it has shown an incredibly efficient way to solve the problems arising out of the twenty-first century. Imagine how fast American courts could clear their dockets if the hearings lasted no more than forty minutes per claim.

As states like Wyoming continue to revisit their state legal infrastructures and make room for laws welcoming innovation with blockchain-based companies, we may not be so far off from more effective and efficient governance. For now, Kleros can be included into any smart contract on the Ethereum blockchain.<sup>212</sup> Parties may rest easy knowing the jurors of Kleros will be incentivized to vote on the correct outcome of their dispute.<sup>213</sup>

While there are endless questions about these technologies and looming threats of vulnerability in these systems, there is more than enough time for the experts in these areas to iron out the kinks. In the meantime, states should consider their own legal system and how it can be expanded in anticipation for the inevitable growth of this digital age.

We were forced to live our lives digitally for nearly two years. The future of a digital life is already here—we must ensure there is enough room within the legal infrastructure to foster its growth.

---

<sup>211</sup> See *Wyoming Laws Regulating Blockchain Businesses*, *supra* note 168; CHINESE COURTS AND INTERNET JUDICIARY, *supra* note 147; LESAEGE ET AL., *supra* note 111.

<sup>212</sup> See LESAEGE ET AL., *supra* note 111, at 3.

<sup>213</sup> See *id.*, at 7.