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Legal Issues in Blockchain, Cryptocurrency, and Non-Fungible Tokens (NFTs)

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ABSTRACT

When do new technologies require changes in the law? Judge Easterbrook argued in 1996 that there is no more need for a "Law of Cyberspace" than there ever was for a "Law of the Horse." Rather, existing laws spanning multiple fields are often sufficient to cover niche factual applications and even new technological change. The same is true now for "The Law of Blockchain." Nonetheless, blockchain marketplace participants lack any cohesive, useful analysis to turn to that is neutral in outcome and performs a comprehensive analysis spanning the multitude of laws affecting the whole ecosystem. We might not need a "Law of Blockchain," yet this article hopes to shed light on the wide scope of existing laws that apply to this new technological era. This article uses legal issues in blockchain to explain when new technology requires new law. Typically, new law is not needed unless existing law fails to provide the rights to assist private bargaining, to yield outcomes contrary to current policy goals, or to address a new type or degree of harm.

Assets on the blockchain have ballooned to billions of dollars, stored everywhere from Bitcoin and Ethereum, to Bored Ape Yacht Club and Lazy Lion NFTs, to new coins, decentralized finance, and play-to-earn gaming, with frequent booms and frequent busts. Despite this, regulators are only just catching up to the complexities of "Web 3.0" and, for many, it can feel like a Wild West. Prospectors, shills, and fraudsters abound, as do innovative companies and community projects. This article hopes to inform Web 3.0 founders, creators, and lawmakers of newly

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emerging legal questions in securities laws, intellectual property, advertising, and more.

This Article can present only one snapshot in time, and indeed the application of existing laws to blockchain and other new technologies will be clarified further by the time this is published. Nonetheless, this Article will hopefully provide a useful framework for how to approach new technology that relies on sound principles of decades-old legal schemes, not the pursuit of a "Law of Blockchain." New applications of old law can shift and define its edges, but adherence to first principles often clarifies what can seem like an uncertain legal landscape.

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I. INTRODUCTION

When do new technologies require changes in law? Judge Easterbrook argued in 1996 that there is no more a need for a "Law of Cyberspace," separate from traditional intellectual property and contract, than there ever was for a "Law of the Horse" separate from traditional tort and contract principles.[1] The same is true of blockchain law. Existing laws spanning multiple fields often are sufficient to cover niche factual applications of new technologies, even if the application of old law to new technology defines old law's edges and showcases its shortcomings. Sometimes, when truly new potential use cases arise that necessitate new rights, or if novel means of harm are under-deterred by prior law, or if existing approaches to law undermine new policy goals, changes are appropriate. Nonetheless, to understand the law applicable to a new technology and whether change is necessary, one must understand the first principles of the legal doctrines that applied to technologies before it.

As blockchain technology creates new avenues for legal mischief and gain, it can be difficult to know what the law is.[2] At this stage, caselaw is nascent, and few scenarios have been specifically defined as legally permissible or impermissible.[3] Moreover, regulators often give time to see how new technology develops before taking an immovable stance. For most conduct arising in any new technology space, however, the testing of old laws against new applications eventually coalesces the law into a clear and definite set of rules, like Michelangelo's David emerging from the marble, albeit not nearly as cohesive or beautiful. The way the law applied to prior technologies dictates its form today.

1. Frank H. Easterbrook, *Cyberspace and the Law of the Horse*, 1996 U. CHI. LEGAL F. 207, 208 (1996) (noting it is "only by putting the law of the horse in the context of broader rules" that one can really understand it).
2. *See Infra* Parts III–VI.
3. *Id.*

The law applying to technology can and should anticipate social and technological changes.[4] It is only when existing law fails to provide the rights to assist private bargaining or fails to address a new type or degree of harm that changes to the law might be necessary. Moreover, new technologies might generate incredible returns if innovators take advantage of gaps between technology and law, arbitraging law and regulation.

Assets on the blockchain have ballooned to billions of dollars, stored everywhere from Bitcoin and Ethereum, to Bored Ape Yacht Club NFTs, to new coins, decentralized finance, and play-to-earn gaming. Despite this, regulators are only now catching up to the complexities of "Web 3.0"[5] and, for many, it can feel like a Wild West. Prospectors, shills, and fraudsters abound, as do some of the most innovative new companies. This article hopes to shed light on the emerging legal questions that arise in Web 3.0. These issues include securities laws, intellectual property, right of publicity, advertising, and more.

Few scholarly articles have addressed whether new corporate law or intellectual property laws are needed to respond to blockchain technology.[6] This Article will explain that for most conduct arising in the blockchain space, existing laws are sufficient to disincentivize bad actors and encourage new innovation and efficient market transactions. Generally, the current issues arising in Web 3.0 do not differ greatly from the factual scenarios that came before them at the dawn of the internet or the dawn of other new technologies, like the camera. This Article will provide a useful, timeless framework for approaching new technology by relying on sound principles of decades-old legal schemes, not a new "Law of the Horse" or "Law of Blockchain." It also notes the limited scenarios where new legal frameworks might be helpful: new corporate forms to account for decentralized autonomous organizations, federal rights where state laws are not consistent, such as right of publicity laws, and considerations of platform liability by decentralized networks. This Article can present only one snapshot in

4. *See generally* MARSHALL MCLUHAN, UNDERSTANDING MEDIA: THE EXTENSIONS OF MAN xi (McGraw-Hill Book Co. 10th ed. 1964) (referencing the "power of the arts to anticipate future social and technological developments, by a generation and more").

5. *Web 3.0 Explained, Plus the History of Web 1.0 and 2.0*, INVESTOPEDIA, https://www.investopedia.com/web-20-web-30-5208698 [https://perma.cc/9GVC-DWSK] (Oct. 23, 2022) (Web 3.0 includes features like decentralization, trustlessness, AI and machine learning).

6. *E.g.*, Carla L. Reyes, *If Rockefeller Were A Coder*, 87 GEO. WASH. L. REV. 373 (2019); Brian L. Frye, *After Copyright: Pwning NFTs in a Clout Economy*, 45 COLUM. J. L.& ARTS 341 (2022); PRIMAVERA DE FILIPPI & AARON WRIGHT, BLOCKCHAIN AND THE LAW: THE RULE OF CODE (2019); *see also Andrew C. Michaels*, *Confusion in Trademarked NFTs*, 6 STAN. J. BLOCKCHAIN L. & POL'Y (forthcoming) (discussing trademark issues in NFTs); Joshua A.T. Fairfield, *Tokenized: The Law of Non-Fungible Tokens and Unique Digital Property*, 97 IND. L.J. 1261 (2022).

time, however, and courts and regulators will address many more cases by the time of publication.

Part II provides a brief introduction to the technological changes of blockchain, Web 3.0, and NFTs for those who are unfamiliar with, or need a refresher on, the technology and introduces some of the cultural norms of the Web 3.0 ecosystem. It then foreshadows the delicate policy balance between precision of law and market freedom to develop any new technology. Parts III-VI share current caselaw and legal doctrines that could apply to blockchain, cryptocurrency, and NFT technology, examining legal issues in fields ranging from securities to intellectual property and more. These parts discuss how to know when a blockchain project, initial coin offering, or NFT project is a security and how doctrines like the "major questions doctrine" affect agency behavior on blockchain topics. Part IV enumerates how patent law eligibility doctrine, trademark infringement, copyright eligibility over generative AI, right of publicity, and sweepstakes laws can apply for blockchain technology. Then, Parts V and VI discuss contractual obligations, digital signatures, platform liability, and obtaining jurisdiction over blockchain actors and assets. These are the sections that will be most helpful to blockchain innovators and lawyers getting to know this area of law. Part VII contains a short policy discussion of why old existing law should continue to apply as technology develops, whether in blockchain, artificial intelligence, or any new technological development.

II. TECHNOLOGY AND CULTURE OF WEB 3.0

For those who need a basic understanding of the technology and culture of blockchain, the following is a non-exhaustive introduction for an audience of technically inclined lawyers, students, and laypeople. Resources for more in-depth understanding are also linked in the footnotes throughout. The technology of blockchain is ever-changing and some references might be outdated even by the time of publication.

A. The Technology of Blockchain: A Wild West and a Gold Rush

Cryptocurrency trading can be volatile. Cryptocurrency prices hit market peaks in 2021 that were three times higher than peaks in 2017, but seventeen times the lows between them in 2019, only to fall again throughout 2022 back to 2017 levels.[7] Ordinary or retail investors who are used to having easy access to stock market investments in publicly traded companies rushed to the perceived gold mine of cryptocurrencies at their peaks, mostly by exchanging fiat currencies like dollars

7. *Bitcoin*, CoinMarketCap, https://coinmarketcap.com/currencies/bitcoin/ [https://perma.cc/7PRA-XEA8] (last visited Oct. 9, 2022) (click "ALL"; Bitcoin peaked at roughly $17,700 in Dec. 2017 and $67,550 in Nov. 2021, before reaching its Oct. 2022 price of $19,500).

for the cryptocurrencies Bitcoin and Ethereum.[8] These two cryptocurrencies currently have over $650 billion of market capitalization combined.[9] Nonetheless, prospectors seeking opportunity to access easy funding used the freedom of this new marketplace to create thousands of new coin and blockchain projects, funding them through sales of newly created coins (often sold in initial coin offerings or ICOs) or nonfungible tokens (NFTs)[10] instead of, or in addition to, obtaining funds from traditional investment vehicles like angel and seed funding using fiat currency under regulated mechanisms.[11]

Cryptocurrencies are perceived stores of value or money that are generally considered fungible, meaning one Bitcoin is equivalent in value to any other Bitcoin just as one dollar bill would be equivalent to, and tradable for, another.[12] Cryptocurrencies are built on blockchain technology, a peer-to-peer distributed, immutable ledger that can be used for any type of transaction.[13] Using blockchain, instead of a database stored on a single computer system or verified by a trusted third party,[14] blockchain ledgers are stored on and verified by a distributed network of devices called nodes.[15] Nodes may be owned by thousands of different people or entities who use a consensus protocol to agree on the content of the ledger.[16] Blockchains can be either public, like the blockchains used for the majority of cryptocurrencies, or private, like a distributed ledger that might be used by a business or group of businesses internally.[17] Private blockchains, especially those permissioned so only authorized individuals can transact, can be used to verify transactions or movement of goods within the company, by business partners to automatically execute contractual events, or, perhaps one day, by licensed practitioners sharing patient data for consistent and

8. *See Today's Cryptocurrency Prices by Market Cap*, CoinMarketCap, https://coinmarketcap.com/ [https://perma.cc/547U-P6DV] (last visited Feb. 16, 2023) (listing popular coins by market capitalization).
9. *Id.* (listing other popular cryptocurrencies such as XRP, Cardano, Dogecoin, Solana, and more, although the market capitalizations of these other coins are far lower, currently ranging from $10 billion for Solana to $20 billion for XRP).
10. *Infra* Part III.
11. *See Cryptocurrency/ICO*, SEC, https://www.sec.gov/ICO [https://perma.cc/TPB7-H9AQ] (last visited Feb. 20, 2023) ("Companies and individuals are increasingly considering initial coin offerings (ICOs) as a way to raise capital or participate in investment opportunities.").
12. *See* Andy Rosen, *What is Cryptocurrency: A Guide for Beginners*, NerdWallet, https://www.nerdwallet.com/article/investing/cryptocurrency [https://perma.cc/H733-AHEN] (Aug. 11, 2023).
13. Sloane Brakeville & Bhargav Perepa, *Blockchain basics: Introduction to distributed ledgers*, IBM https://developer.ibm.com/tutorials/cl-blockchain-basics-intro-bluemix-trs/ [https://perma.cc/6SWQ-8SUR] (last visited Oct. 9, 2022).
14. An example of such a trusted third party might be a financial institution.
15. *Id.*
16. *Id.*
17. *Id.*

informed service across providers.[18] Most but not all publicly accessible blockchains are permissionless, meaning transactions are not restricted to pre-authorized individuals.[19] Blockchains are immutable sources of past transaction data (except in a few historical exceptions[20]) and changes are permanent and append-only, meaning new network-verified entries can get added to the ledger but prior entries cannot be removed.[21] As a result, methods to ensure the veracity of entries into the ledger are critically important to the function of blockchain technologies.[22]

There are two prominent technological approaches to verifying blockchain transactions in order to enter them onto the ledger: proof of work and proof of stake.[23] Bitcoin and some other blockchains use proof of work models, where the authenticity of a transaction is verified by solving cryptographic math puzzles, requiring significant computing power but rewarding the "miner" with a transaction fee when they complete the puzzle and enter a data block.[24] In an effort to reduce required computing power, among other goals, Ethereum recently switched to proof of stake, where the authenticity of a transaction is ensured by requiring "validators" who verify transactions to "stake," or keep, at least 32 ETH as collateral that can be destroyed if they falsify or fail to complete a transaction.[25] Validators can also use their staked Ethereum to earn tips and rewards if they execute transactions correctly.[26] Miners and validators are critical to the success of a decentralized ledger.

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18. *See id.*; *Permissioned blockchain vs. permissionless blockchain: Key differences*, CoinTelegraph https://cointelegraph.com/learn/permissioned-blockchain-vs-permissionless-blockchain-key-differences [https://perma.cc/V7RV-S457] (last visited Dec. 15, 2023).
19. *Id.*
20. *The history of Ethereum*, Ethereum.org, https://ethereum.org/en/history/#dao-fork [https://perma.cc/AYC8-C73E] (last visited Feb. 16, 2023) (In 2016, following a hack of a Decentralized Autonomous Organization (DAO) contract, Ethereum forked into two chains, Ethereum Classic that remained immutable and current Ethereum blockchain that restored stolen funds to their original owners.).
21. Brakeville & Perepa, *supra* note 13.
22. *See id.*
23. *What is "proof of work" or "proof of stake"?*, Coinbase, https://www.coinbase.com/learn/crypto-basics/what-is-proof-of-work-or-proof-of-stake [https://perma.cc/RKZ9-NTTN] (last visited Feb. 20, 2023).
24. *Id.* More precisely, miners compete to be the first to uncover a cryptographic hash or key through trial and error, which is more effective on higher powered computers, and the successful miner creates the block and earns the reward. *See id.*
25. @vdusart et al., *Proof-of-Stake (POS)*, Ethereum.org (last updated Jul. 25, 2023) https://ethereum.org/en/developers/docs/consensus-mechanisms/pos/ [https://perma.cc/2986-RGB9].
26. *Id.*; *Ethereum's energy expenditure*, Ethereum.org, https://ethereum.org/en/energy-consumption/ [https://perma.cc/VR3P-V3KQ] (Oc. 20, 2023) (Nonetheless, the Ethereum network often still has higher transaction fees than Bitcoin; Ethereum "gas" fees are based on considerations both of the complexity of the

Consumers can purchase and trade cryptocurrency on a cryptocurrency exchange. Centralized exchanges like Coinbase and Binance are run by a single corporation or entity and typically maintain custody of the user's wallet and cryptographic keys, much like a bank would serve as the custodian of a customer's bank account.[27] Decentralized exchanges are also available, which allow users to maintain control over their own wallet and cryptographic keys while they trade cryptocurrencies but rarely enable conversion between cryptocurrency and fiat.[28] Centralized exchanges are, therefore, typically the first stop for consumers to obtain cryptocurrency using fiat currency.[29] Most centralized wallet custodians collect information sufficient to identify the user, whereas an individual can create and hold their own crypto wallet without providing identifying information.[30] Nonetheless, crypto wallets can be identified using a unique ID, and, because every transaction is traceable through the blockchain ledger, wallet accounts can be used to identify the holder when withdrawals occur to centralized accounts like fiat currency banks or other accounts to which the user has associated their identifying information.[31]

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transaction and the network congestion and the Ethereum network allows more complex transactions like smart contracts that require higher fees); Brian Nibley, *What Is Ethereum Gas?*, SoFi (Aug. 15, 2022), https://www.sofi.com/learn/content/what-is-ethereum-gas/ [https://perma.cc/VNN3-7VLG]; Matt Binder, *Bored Ape Yacht Club caused Ethereum fees to soar to astronomical levels*, Mashable (May 2, 2022), https://mashable.com/article/ethereum-gas-fees-skyrocket-bored-ape-yacht-club-otherside-nft-launch [https://perma.cc/FR7L-T6TY] (discussing fees rising to thousands of dollars during extreme network congestion caused by complex and popular transactions); *see Ethereum sharding: A beginner's guide to blockchain sharding*, CoinTelegraph, https://cointelegraph.com/ethereum-for-beginners/ethereum-sharding-a-beginners-guide-to-blockchain-sharding [https://perma.cc/WW54-8G7S] (last visited Feb. 21, 2023) (discussing how high gas fees on Ethereum are not expected to fall significantly until additional upgrades such as "sharding" occur to reduce network congestion and enable operation of more validators.).

27. *See Centralized*, Coinbase, https://help.coinbase.com/en/coinbase/getting-started/crypto-education/glossary/centralized [https://perma.cc/PZX8-CT6X] (last visited Nov. 18, 2023).
28. *See 16 Best Decentralized Exchanges of 2022*, Bybit (Dec. 6, 2022), https://learn.bybit.com/defi/best-decentralized-exchange/ [https://perma.cc/E8KB-V3FK].
29. *See Using a bank account as a payment method for U.S. customers*, Coinbase, https://help.coinbase.com/en/coinbase/getting-started/add-a-payment-method/using-a-bank-account-as-a-payment-method-for-us-customers [https://perma.cc/3EYM-AHM9] (last visited Nov. 18, 2023).
30. *See, e.g.*, Dave Ackerman, *MobileCoin and the Art of Compliance*, MobileCoin (Feb. 16, 2023), https://mobilecoin.com/blog/mobilecoin-compliance-cryptocurrency-encrypted-payments-digital-cash [https://perma.cc/U2N3-HAP9] (MobileCoin on Signal, or hard wallets like Ledger Nano provide an example of this).
31. *See What are Anonymous Crypto Wallets?*, HyperVerge (Feb. 10, 2023), https://hyperverge.co/blog/anonymous-crypto-wallets (noting the traceability of blockchain transactions) [https://perma.cc/7SVZ-ERAG].

Blockchain technology can also be assisted or enhanced by off-chain systems or applications. Transactions entered on the primary ledger, such as cryptocurrency trades and smart contract transactions on chains that support them, are referred to as Layer 1 transactions.[32] Layer 2 consists of off-chain processing tools to improve the speed and efficiency of Layer 1 transactions.[33] One example of a Layer 2 action is limiting transaction fees by consolidating multiple transactions into a single entry on the main blockchain, as in the case of Bitcoin's Lightning Network.[34] Layer 3 technology, or blockchain applications, layers on top of blockchain to perform other uses and applications off the chain, such as lending, borrowing, interest-earning, and insurance using Decentralized Finance or DeFi applications,[35] or even gaming applications that incorporate blockchain assets, or distributed storage. Decentralized Autonomous Organizations (DAOs) are another use of blockchains where an organization can run autonomously using blockchain smart contracts and voting mechanisms that are often proportional to ownership shares.[36] DAOs can, however, carry unique risks of exploitation.[37]

The Ethereum, Solana, Avalanche, and Cardano blockchains, among others, allow users to transact in "smart contracts" or "chaincode," although Bitcoin's main blockchain does not.[38] Smart contracts, or chaincode, are computer programs that tell the ledger how to behave when certain actions occur, such as a program that if payment is received, a representation of ownership of an asset will be transferred or a notification will occur.[39] Some argue that in the future this chaincode could be used for intellectual property transfers or real estate transactions, but the technology is not yet sufficiently failsafe; if people

32. *What is layer 2?*, ETHEREUM.ORG, https://ethereum.org/en/layer-2/ [https://perma.cc/LAU5-SRZL] (last visited Mar. 5, 2023).
33. *Id.*
34. *layer 2 the lightning network*, MIT DIGIT. CURRENCY INITIATIVE, https://dci.mit.edu/lightning-network [https://perma.cc/UC5Q-LA4L] (last visited Mar. 5, 2023).
35. *Lesson 07: Finance Decentralized*, METAMASK, https://learn.metamask.io/lessons/finance-decentralized [https://perma.cc/JZF3-FL87] (last visited Mar. 3, 2023); *Decentralized Finance (DeFi)*, ETHEREUM.ORG, https://ethereum.org/en/defi/ [https://perma.cc/X6TA-7DFQ] (last visited Mar. 5, 2023).
36. Nathan Reiff, *Decentralized Autonomous Organization (DAO): Definition, Purpose, and Example*, INVESTOPEDIA (Sept. 30, 2022), https://www.investopedia.com/tech/what-dao/ [https://perma.cc/37HK-78S5].
37. *Id.*
38. Jeffrey Craig, *Which Layer 1 Smart Contract Platforms Will Survive?*, PHEMEX (July 1, 2022, 9:32 AM), https://phemex.com/blogs/which-layer-1-smart-contract-platforms-will-survive [https://perma.cc/AXG2-234Y]. Bitcoin can support very limited programming functions but not code with if-then statements like other networks. *See What Are Bitcoin Smart Contracts*, RIVER LEARN, https://river.com/learn/what-are-bitcoin-smart-contracts/ [https://perma.cc/64L4-5XTV] (last visited Dec. 18, 2023).
39. Brakeville & Perepa, *supra* note 13.

lose cryptographic keys or software errors occur, they could lose the ability to control the asset or the token representing the asset could be accidentally locked or destroyed.[40] Nonetheless, a smart contract is not necessarily a legal contract, but a computer program—a complication that is addressed in more depth below.[41]

In addition to finance applications, blockchain technology can also be used by artists and art collectors. Artists can use blockchain technology to make non-fungible tokens (NFTs) that represent their artwork.[42] NFTs are minted, or created, by associating a token in a blockchain ledger to a particular work of (often digital) art or any other tangible or intangible object, providing the opportunity to sell that token on NFT marketplaces like Opensea.[43] Most commonly, each NFT is one-of-one or unique. NFTs can represent a standalone work of art, but one of the most popular uses of NFTs is to create profile picture (PFP) art projects, often sold in series of 10,000 NFTs and containing generated images that bear certain traits or features, like a cartoon animal with different hats, skins, and facial expressions that vary across the series, like Yuga Labs' Bored Ape Yacht Club[44] and Larva Labs' CryptoPunks.[45] NFT creators can earn money via initial sales and through creator fees collected on downstream sales.[46] Artists who created successful NFT projects at market peaks earned millions if, for example, they sold 10,000 NFTs that earn $200 each, or from ongoing royalties on future sales if applicable and enforceable.[47] Most art content is not stored in the blockchain ledger due to size, but rather NFT metadata is used to point to content stored on typically-centralized servers like image

40. Marc Richards & Daniel Broaddus, *Converting Your Patent Portfolio to Patent NFTs? Best to 'Wait and See'*, IPWatchdog (July 8, 2021, 1:15 PM), https://www.ipwatchdog.com/2021/07/08/converting-patent-portfolio-patent-nfts-best-wait-see/id=135328/ [https://perma.cc/MC9T-PDBB].
41. *See id.*; *see infra* Part IV (discussing when smart contracts can constitute legally sufficient documents).
42. *What is a Non-Fungible Token (NFT)?*, OpenSea (Oct. 11, 2023), https://support.opensea.io/hc/en-us/articles/360063450733-What-is-a-Non-Fungible-Token-NFT [https://perma.cc/ZCF3-6YSR].
43. *Id.*
44. *BAYC*, Yuga Labs, https://boredapeyachtclub.com/ [https://perma.cc/WE43-GEN6] (last visited Feb. 21, 2023).
45. *CryptoPunks*, Larva Labs, https://www.larvalabs.com/cryptopunks [https://perma.cc/QYQ2-E2LX] (last visited Feb. 21, 2023).
46. *See* Andrew Hayward, *OpenSea Again Changes Course on NFT Royalties After More Creator Pushback*, Decrypt (Dec. 8, 2022), https://decrypt.co/116768/opensea-changes-nft-royalties-creator-pushback [https://perma.cc/6XB3-RZVS] (Nonetheless, creator fees are not generally automatically paid via smart contracts and require enforcement off-chain by NFT marketplaces.).
47. *See* Nicholas Boey, *Most Profitable NFT Projects by Royalty Earnings on Ethereum*, CoinGecko (Aug. 3, 2023), https://www.coingecko.com/research/publications/most-profitable-nft-projects-ethereum [https://perma.cc/N3EE-37F7].

hosting sites[48] or sometimes to a location on a peer-to-peer file storage like the Interplanetary File System (IPFS).[49] A common smart contract standard for NFTs, ERC-721 on the Ethereum blockchain, allows an NFT to include not only a pointer to the url containing the artwork, but also identification of traits (like hair and eye color, expressions, etc.), access to special items, events that are triggered upon meeting certain conditions, and more.[50]

Blockchain technology, while not useful for all applications, is a significant innovation for fintech and the internet.[51] It will pose unique legal and ethical challenges. Some argue that blockchain is "the strongest challenge ever posed to the monopoly of the state over the promulgation, formation, keeping and verification of institutions and the public record."[52] By giving users control over their assets and transactions without the need of a trusted intermediary like a bank, blockchain changes how business has predominantly been conducted in recent history. Nonetheless, users and businesses are subject to local laws and regulations governing their own conduct. If they continue to engage in the blockchain marketplace using centralized tools such as centralized exchanges, centralized data storage, and centralized layer 3 solutions, their conduct will be easily reached by laws like the Digital Millennium Copyright Act and others that govern online activities. Moreover, even those who use all decentralized solutions stand to benefit by understanding and using legal protections, like intellectual property law, that are available for developments in this new technology. The law, however, does not need to be new to extend to blockchain activities and businesses. It is entirely possible that existing laws are sufficient to encourage honest, efficient, innovative, and nonharmful uses of this technology, as will be discussed further below.

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48. *See generally* Ezra Reguerra, *NFTs minted on FTX break, highlighting Web2 hosting flaws*, CoinTelegraph (Dec. 8, 2022), https://cointelegraph.com/news/nfts-minted-on-ftx-break-highlighting-web2-hosting-flaws [https://perma.cc/5LX8-MS42].
49. IPFS, https://docs.ipfs.tech [https://perma.cc/GF4R-CT7A] (last visited Nov. 19, 2023); Klint Finley, *The Inventors of the Internet Are Trying to Build a Truly Permanent Web*, Wired (Jun. 20, 2016), https://www.wired.com/2016/06/inventors-internet-trying-build-truly-permanent-web/ [https://perma.cc/NM9D-DX6P].
50. *ERC-721 Non-Fungible Token Standard*, Ethereum.org (June 23, 2023), https://ethereum.org/en/developers/docs/standards/tokens/erc-721/ [https://perma.cc/D3262AXK].
51. *See* Georgios Dimitropoulos, *The Law of Blockchain*, 95 Wash. L. Rev. 1117, 1119 (2020) ("Blockchain is arguably the most significant development in accounting since double-entry bookkeeping."); Kevin Werbach, *Trust, But Verify: Why the Blockchain Needs the Law*, 33 Berkeley Tech. L.J. 487, 487 (2018) ("The blockchain could be the most consequential development in information technology since the Internet.").
52. Brendan Markey-Towler, *Anarchy, Blockchain and Utopia: A Theory of Political-Socioeconomic Systems Organised Using Blockchain*, 1 J. Brit. Blockchain Ass'n 13, 13 (2018).

B. Cryptoanarchy and a Culture of Exploitation

Today's regulators and prosecutors are attempting to track down bad actors who abuse blockchain technology to evade prosecution of their wrongs.[53] Yet, at the dawn of blockchain, Web 3.0 was a Wild West, sitting far from the sights of regulators and lawmakers. In that era, few blockchain projects followed normal regulatory protocols for startup funding, such as limiting sales of unregistered securities to accredited investors.[54] Even without legal certainty, blockchain-based companies and projects proliferated. Thousands of new coins came to the market, serving as alternative coins to Bitcoin and Ethereum, like Solana, Ripple (XRP), Cardano, Litecoin, Mobile Coin, Dogecoin, and others ("altcoins").[55] Companies raised capital by engaging in initial coin offerings (ICOs), making coins or tokens representing their company available for sale to the public, instead of following the regulatory requirements of initial public offerings of stock.[56]

It was not only cryptocurrency trading that invited bad actors; fraudsters and morally gray conduct proliferated throughout the ecosystem. For example, some unscrupulous NFT minters copied artwork, which was not theirs, to mint into an NFT they then sold.[57] Twitter allowed users to upload profile images that reflect an NFT they owned, even if they didn't own the copyright license to display it (or copied another NFT's image and reminted it without authorization).[58] Quentin Tarantino attempted to offer NFTs representing ownership of clips of screenplay scenes of Pulp Fiction.[59] Gaming companies created play-to-earn gaming like the game Axie Infinity, which uses game assets that are listed and tradeable as NFTs on the blockchain.[60] Axie was later accused of fostering exploitation of the poor in third-world

53. *See, e.g.,* Complaint, SEC v. Eisenberg, No. 23-CV-503 (S.D.N.Y. Jan. 20, 2023) [https://perma.cc/9AHN-7MNZ].
54. *See Infra* Part II.
55. CoinMarketCap, *supra* note 7.
56. *Cryptocurrency/ICO*, *supra* note 11.
57. Ellen Glover, *NFT Art Theft*, Builtin (Sept. 6, 2022), https://builtin.com/design-ux/NFT-art-theft [https://perma.cc/6H3T-FAFQ].
58. Richard Lawler, *Twitter brings NFTs to the timeline as hexagon-shaped profile pictures*, The Verge (Jan. 21, 2022, 8:09 AM), https://www.theverge.com/2022/1/20/22893502/nft-twitter-profile-picture-crypto-wallet-opensea-coinbase-right-click [https://perma.cc/U8SX-FC8W].
59. Ana Paula Pereira, *Quentin Tarantino settles Miramax lawsuit over Pulp Fiction NFTs*, CoinTelegraph (Sept. 9, 2022), https://cointelegraph.com/news/quentin-tarantino-settles-miramax-lawsuit-over-pulp-fiction-nfts [https://perma.cc/255S-728H].
60. VICE News, *Reporting on Play-to-Earn Gaming: Field Notes*, YouTube (July. 22, 2022), https://www.youtube.com/watch?v=QGH-2fJzXqo&t=20s [https://perma.cc/7LUE-K8CJ].

countries to earn those assets for wealthier owners, what VICE News then called "cryptocolonialism."[61]

The blockchain also became a place of rampant, blatantly illegal conduct. Fraud and hacks in particular have been pervasive. In one example, cryptocurrency exchange, Binance, faced a $570 million hack in October 2022.[62] Over $2 billion was stolen in hacks taking advantage of the same vulnerability.[63] Well-known cryptocurrency enthusiasts have also been at risk of physical attacks or blackmail to obtain access to their private keys for cryptocurrency.[64]

"Cypherpunks" (a term covering those who advocate for the adoption of cryptocurrencies and distributed ledger technology as a means of freedom from government) sometimes respond to these hacks with an ethos of "code is law," urging that if the code of a smart contract or software design creates a vulnerability, then there is nothing wrong with exploiting it.[65] It is true that blockchain and cryptocurrency can be a way for the population to reduce the role of government or centralized intermediaries in their transactions.[66] Many do not realize that as citizens of various countries, they are still subject to laws governing their behavior in that country even when they are using decentralized finance and governance; unless the laws of those countries provide allowances for uses of the financial systems and governance structures used in a Web3 world, traditional laws of finance, torts, contracts, and intellectual property will apply to those transactions.[67] Regulators are just now catching up and attempting to rein in unlawful conduct and allow legitimate technology developers to move forward with more clarity.

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61. *Id.*; Daniel Phillips, *What Is Axie Infinity?*, CoinMarketCap.com, https://coinmarketcap.com/alexandria/article/what-is-axie-infinity [https://perma.cc/7AVZ-QBLH] (last visited Oct. 9, 2022).
62. Ephrat Livni, *Binance Blockchain Hit by $570 Million Hack, Exposing Crypto Vulnerabilities*, N.Y. Times (Oct. 7, 2022), https://www.nytimes.com/2022/10/07/business/binance-hack.html [https://perma.cc/YMS2-D6BG].
63. *Id.*
64. Zhiyuan Sun, *$5 wrench attacks appear to be on the rise in crypto community*, Cointelegraph (Feb. 2, 2022), chttps://cointelegraph.com/news/5-wrench-attacks-appear-to-be-on-the-rise-in-the-crypto-community [https://perma.cc/TU3F-3XAK].
65. *See Client Alert: "Code is Law,"* Quin Emanuel: Trial Lawyers, https://www.quinnemanuel.com/the-firm/publications/code-is-law/ [https://perma.cc/NJW4-3UP4] (last visited Oct. 11, 2023).
66. *See* Brandon Possin, *U.S. Diplomat to Washington: You're Becoming Obsolete in One Big Area of Tech Policy*, Politico (Apr. 3, 2023, 3:00 PM), https://www.politico.com/news/magazine/2023/04/03/the-us-is-already-losing-to-china-00089999 [https://perma.cc/RTA9-7UCQ] (proposing that blockchain "has *already* expanded the number of things that people can do without government or private-sector intermediaries.").
67. *Infra* Parts II, III, IV, and V.

C. Can Blockchain Law Keep up with Innovation?

There is a delicate balance in every innovative industry between regulators and boundary-pushing innovators. New technologies with financial, regulatory, and legal implications often run faster than law and regulation can keep up, in part because implementors are closer to the technology and can predict its direction more easily than regulators.[68] Often, however, regulators find that existing laws, and arguments they can make in court for reasonable extension of those existing laws to new facts, allow them to prevent bad actors while limiting interventions that could put brakes on technological growth.[69] Regulators of new technologies might rationally delay enforcement and rulemaking to allow technological growth and assess an industry's direction.

For centuries, new technology has been a panacea for improvements to society's wealth, amusement, and quality of life.[70] Regulators and lawmakers must strike a careful balance. Treating blockchain law as just a new application of old laws, instead of waiting for a law of blockchain to be passed, might help the law covering this technology keep pace with innovation. Indeed, having broad general rules and statutes that apply to technology allows for the development of law to take place primarily through the common law application of laws to new facts. Common law provides a more agile evolution of law than regulation, which must go through procedures required of administrative agencies.[71] On the other hand, common law is often (and perhaps appropriately) not informed by policy needs; judges decide cases based on whether the facts are analogous to prior fact patterns, giving some clarity and predictability to lawyers and their clients. Lawmaking and rulemaking allow for a policy-first approach, which can result in more thoughtful decisions on what conduct ought to be prohibited. Both legislation and administrative rulemaking, however, take significant time and often only respond to new technology years after its creation, leaving some harms unaddressed and rights unclear far too long after good actors have invested in the technology on the assumption that particular conduct is lawful. Courts, lawmakers, and regulators all have a role to play in ensuring fair and predictable rules for new technology

68. *But see* JOSHUA FAIRFIELD, RUNAWAY TECHNOLOGY 4 (Cambridge University Press 2021) (arguing law must keep up).

69. *See* Letter from Vanessa A. Countryman, Sec'y, to Paul Grewal, Chief Legal Officer for Coinbase Glob., (Dec. 15, 2023) (declining to engage in rulemaking on blockchain issues because the SEC "disagrees . . . that application of existing securities statutes and regulations to crypto asset securities . . . is unworkable").

70. *See generally* Marc Andreessen, *The Techno-Optimist Manifesto*, ANDREESSEN HOROWITZ (Oct. 16, 2023), https://a16z.com/the-techno-optimist-manifesto/ [https://perma.cc/L9AV-GHY8]. One potential addition to this manifesto, indeed, is the role that law that supports innovation plays in causing innovation to flourish.

71. *See generally* Administrative Procedure Act, 5 U.S.C. § 553 (1966) (requiring agencies to follow specified procedures for rulemaking).

like blockchain. Now, after the common law has had its say for about a year, and the direction of blockchain technology seems more certain, might be the perfect time for regulators to bring enforcement actions to clarify the law and give notice that clear breaches of existing laws will no longer be tolerated as it was in the early days of blockchain.

This Article will focus on some critical corporate and intellectual property law issues that businesses must be aware of when entering in or investing into this technology space. It will evaluate where old laws can sufficiently extend to new technology and where it might need to change to protect lawful innovators and citizens. The Article will also mention, but not linger on, the myriad criminal issues of outright theft, fraud, and hacking that also pervade the industry and are worthy of additional investigation. Law enforcement, regulatory agencies, and lawmakers have historically not kept pace with changing blockchain technology, and a day of reckoning is likely coming. Lawsuits related to blockchain and the decentralized web are increasing, as are regulatory investigations. Companies entering the market now must prepare for and try to structure their business to limit legal liability and maximize their protectable assets. Typically, the same laws that have applied to other new technologies will apply to these actors' conduct.

III. SECURITIES & CORPORATE LAW ISSUES

A. How to Tell When a Blockchain Project Is an Unlawful Security?

Blockchain enables new fundraising technologies for projects through initial coin offerings (ICOs) and non-fungible tokens (NFTs). However, those who create and sell cryptocurrencies and NFT projects must ensure that their sales either do not fall under the purview of securities law or, otherwise, that they follow the legal requirements set forth by the Securities and Exchange Commission (SEC) for the sale of securities.[72] Specifically, all securities must either be registered with the SEC and submit to disclosure obligations or meet limited exceptions, such as if the project sells only to Accredited Investors.[73] These laws exist to ensure that unscrupulous actors do not sell a promise of investment returns in black box projects that fail to inform ordinary investors of the risk of loss.[74]

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72. The Securities Act of 1933, 15 U.S.C. § 77d.
73. *Id.*; SEC, *Accredited Investors—Updated Investor Bulletin*, INVESTOR.GOV (April 14, 2021), https://www.investor.gov/introduction-investing/general-resources/ news-alerts/alerts-bulletins/investor-bulletins/updated-3 [https://perma.cc/C4RB-DXSQ] (Accredited Investors are certain high net-worth individuals and other sophisticated parties where the SEC is less concerned about information asymmetry in the sale).
74. The Securities Act of 1933, 15 U.S.C. § 77d; SEC, *Accredited Investors—Updated Investor Bulletin*, INVESTOR.GOV (April 14, 2021), https://www.investor.gov/

Under the Securities Act of 1933, securities are defined to include stocks, bonds, notes, and notably, investment contracts—a broad catch-all that is the most likely category for unconventional business investments like blockchain projects.[75] The Supreme Court case *Securities and Exchange Commission v. W.J. Howey Co.*, which addressed sales of contracts regarding citrus groves, clarified that regardless of the type of asset, an offering is an "investment contract" if there is a transaction or contract where "a person invests his money in a common enterprise and is led to expect profits solely from the efforts of the promoter or a third party."[76] This test has been used for decades for a wide range of money-making projects, but it is only in recent years that courts and regulators have started to decide how the *Howey* test applies to blockchain transactions.

The SEC has not issued a statement specifically delineating which cryptocurrencies it considers securities, or which NFT project sales constitute investment contracts, although in a number of lawsuits the SEC has alleged that platforms' sales of cryptocurrencies (notably excluding Bitcoin) are unlawful.[77] As discussed further below, courts have, in some cases, agreed and in others disagreed that token sales constituted sales of securities. The distinction between a security and a commodity or asset sale, is largely how those tokens were marketed and sold and if the organization used the proceeds of token sales to fund growth in value. As the SEC ramps up enforcement efforts[78] and more cases reach the courts, it will be important for market stability that the courts (and perhaps Congress[79] if it disagrees with the

introduction-investing/general-resources/news-alerts/alerts-bulletins/investor-bulletins/updated-3 [https://perma.cc/C4RB-DXSQ].

75. The Securities Act of 1933, 15 U.S.C. § 77b(a)(1).

76. SEC v. W.J. Howey Co., 328 U.S. 293, 299 (1946).

77. Jesse Coghlan, *SEC lawsuits: 68 cryptocurrencies are now seen as securities by the SEC*, COINTELEGRAPH (June 6, 2023), https://cointelegraph.com/news/sec-labels-61-cryptocurrencies-securities-after-binance-suit [https://perma.cc/FEJ6-KW3X]; *see also* Ankush Khardori, *Can Gary Gensler Survive Crypto Winter? D.C.'s top financial cop on Bankman-Fried blowback*, N.Y. MAG.COM (Feb. 23, 2023), https://nymag.com/intelligencer/2023/02/gary-gensler-on-meeting-with-sbf-and-his-crypto-crackdown.html [https://perma.cc/67M8-XT8B] (SEC chair Gensler stating "[e]verything other than bitcoin" is a security). In the SEC's statement of approval of Bitcoin exchange-traded products (ETP), SEC Chair Gensler states that bitcoin is a "non-security commodity" whereas "the vast majority of crypto assets are investment contracts and thus subject to the federal securities laws." Gary Gensler, *Statement on the Approval of Spot Bitcoin Exchange-Traded Products*, SEC (Jan. 10, 2024), https://www.sec.gov/news/statement/gensler-statement-spot-bitcoin-011023.

78. *See Crypto Assets and Cyber Enforcement Actions*, SEC, https://www.sec.gov/spotlight/cybersecurity-enforcement-actions [https://perma.cc/XL4R-RTN6] (last visited Aug. 26, 2023) (listing SEC enforcement actions regarding crypto assets).

79. *See* Financial Innovation and Technology for the 21st Century Act, H.R. 4763, 118th Cong. (2023); Clarity for Payment Stablecoins Act of 2023, H.R. 4766, 118th Cong. (2023).

outcomes reached by court decisions) provide clear guideposts of which blockchain projects fall within the purview of securities law.[80]

Even if a company's offering could be a security, companies can take proactive steps to ensure compliance with the law before their offering is live. Companies that might be selling unregistered securities if they were selling tokens or NFTs *to the public*, can limit sales to only Accredited Investors (those with a net worth over $1 million, excluding their primary residence, or an income over $200,000 per year for more than two years), other specified classes of individuals, or investment entities in compliance with SEC Rules 504 or 506.[81] Companies relying on these exemptions to registration of securities must nonetheless timely file a Form D with the SEC providing information on those sales.[82]

1. Initial Coin Offerings

Early caselaw is surprisingly encouraging for companies and projects that sell tokens on public exchanges and do not market their cryptocurrency projects as investment opportunities. On July 13, 2023, a federal district court in New York decided a case brought against Ripple (makers of XRP token), ultimately finding Ripple liable for some, but not all, of the accused securities violations.[83] Ripple had been selling XRP tokens on open exchanges, providing the tokens in exchange for services, and selling them directly to investors for nearly a decade, as well as marketing XRP to the public, without making any securities disclosure filings to the SEC.[84] The court highlighted that, in the past, countless tangible or intangible assets, from citrus groves to beavers to whiskey, have formed the basis for an investment contract under the Securities Act, so there was no dispute that cryptocurrency could form the basis for an investment contract and be subject to securities laws.[85] The court applied the *Howey* test but emphasized that *Howey* focuses not on formal requirements but rather on "an investor's expectation," i.e., the reality of whether those who purchase XRP could expect that

80. *See generally* Brian Frye, *The Value of Art* (June 20, 2023) (unpublished manuscript) https://ssrn.com/abstract=4486523 (some scholars assert that under an overly-broad reading of securities laws that includes NFT sales, some physical art sales would also be securities).
81. 17 C.F.R. §§ 230.504, 230.506; INVESTOR.GOV, *supra* note 73.
82. 17 C.F.R. § 230.503.
83. SEC v. Ripple Labs, Inc., No. 20 Civ. 10832 (AT), 2023 WL 4507900, at *1 (S.D.N.Y. July 13, 2023).
84. *Id.*
85. *Id.* at *7 (suggesting that depending on the circumstances of sale and marketing and the expectations of the parties, a fruit, flower, gold, or token can be used as a consumable, a currency, or an investment in the same moment).

their investment would allow them to profit from the effort of Ripple based on its promises and marketing.[86]

Ultimately, the court found that Ripple engaged in the unregistered sale of securities under the Securities Act for its direct sales of XRP tokens to institutional investors.[87] However, the court found that when individuals purchased XRP from public exchanges, there was no investment contract because exchange purchasers could not expect that their purchase price would go to fund XRP's growth and value; these purchases were blind bid/ask transactions where purchasers would not know whether the seller was Ripple or an unaffiliated secondary market seller.[88] With respect to unpaid distributions to employees and developers, the court found that because the recipients did not pay anything, such as cash, currency, or other consideration, for their XRP tokens, these distributions were also not investments.[89]

In order to apply the *Ripple* court's reasoning to other factual scenarios, it is necessary to understand how each factor weighed for or against Ripple in this case. For each type of transaction Ripple engaged in, the court separately analyzed each factor of *Howey*, considering, for example, whether there was a "common enterprise" based on whether the investor assets were pooled in a way that the success of one investor was tied to the success of the whole enterprise or group of investments (e.g., if a common coin was given in return) and, separately, whether investors purchased the token expecting it could gain value because their purchase supported continued marketing and development efforts from Ripple.[90] The court's analysis suggests the following general rules for new coin and even NFT projects:

(1) Sales of a common token or digital asset directly from the entity developing the token are likely to constitute securities, particularly if the entity promotes the token as something that will increase in value or if it is clear the purchase will fund future development and value.
(2) Blind bid/ask transactions on a public exchange, where purchasers are unaware of who is selling the token, and purchasers are not induced to purchase by marketing material, have a lower risk of being unregistered sales of securities by the developing entity.
(3) Gifted tokens, as well as tokens given to employees as compensation for services, are unlikely to constitute a security.[91]

Therefore, it is not the type of asset but the sales context and marketing copy that most impacts whether a sale is found to be a sale of a security. The *Ripple Labs* case, however, is a unique and ongoing lower

86. *Id.* at *6.
87. *Id.* at *11.
88. *Id*.
89. *Id.* at *13.
90. *Id.* at *9–10.
91. SEC v. Ripple Labs, Inc., No. 20 Civ. 10832 (AT), 2023 WL 4507900, at *9–13 (S.D.N.Y. July 13, 2023).

court case, which might not hold up on appeal[92] or be repeated in other jurisdictions. Appellate courts and other jurisdictions could reach different outcomes, such as finding that sales on public exchanges are securities sales.

Nonetheless, other cases previously made clear that direct sales, especially when made with promises of gains, are securities. For example, a court previously found that Telegram's initial coin offering of Gram tokens (sold directly to initial purchasers with a lockup agreement and promised floor prices) likely constituted a sale of unregistered securities.[93] The same court also found that Kik sold unregistered securities when it created and sold Kin tokens directly to purchasers for dollars or ETH, all while promoting how early purchasers of Kin token could "make a lot of money."[94] *Telegram* and *Kik* provide a clear line for prohibited conduct in direct sales. At the other end of the spectrum, the *Ripple* case found that blind sales on public exchanges, which were not prompted by a company's marketing promises, would not constitute unregistered public sales of securities.[95] Additional caselaw in the coming years will clarify the cases in between, such as direct sales of tokens marketed as utility tokens, public exchange sales driven by marketing of investment returns, decentralized finance, and staking.[96] Broad securities laws that extend to new innovations have enabled courts to sanction the behaviors of bad actors in the blockchain space. Even so, broad securities statutes and one-off court decisions, which could take decades to reach finality, leave members of the industry

92. Motion for Leave to Appeal, S.E.C. v. Ripple Labs, Inc., No. 20-Civ. 10832, 2023 WL 4507900 (Aug. 18, 2023) No. 892. The Court denied the motion for interlocutory appeal. *See* Order, S.E.C. v. Ripple Labs, Inc., No. 20 Civ. 10832, 2023 WL 4507900 (Oct. 3, 2023) (finding interlocutory review was inappropriate). Following the final judgment, SEC will likely appeal under standard procedures.

93. SEC v. Telegram Grp. Inc., 448 F. Supp. 3d 352, 379 (S.D.N.Y. 2020) (granting motion for preliminary injunction against Telegram).

94. SEC v. Kik Interactive Inc., 492 F. Supp. 3d 169, 174–79 (S.D.N.Y. 2020); *see also id.* at 179 ("The economic reality is that Kik, as it said it would, pooled proceeds from its sales of Kin in an effort to create an infrastructure for Kin, and thus boost the value of the investment."); *Id.* at 181 (The court also found that pre-sales to accredited investors violated the securities laws because they were part of an integrated offering with the non-compliant public sale); Final Order, SEC v. Kik Interactive Inc., No. 1:19-CV-05244, (Oct. 21, 2020) No. 90 (stating that Kik raised $100 million through the various initial sales of Kin and faced an injunction and a $5 million fine following the court's order). "[W]hen defendants convey to potential purchasers of an asset class that the anticipated return on their investment will be the result of those defendants' efforts to commercialize the asset, this can be enough" to render an asset a security under the Securities Act. De Ford v. Koutoulas, No. 6:22-CV-652, 2023 WL 2709816, at *14 (M.D. Fla. Mar. 30, 2023) (finding Let's Go Brandon Coin could constitute an unregistered offering of a security in a class action litigation for violations of the securities Act).

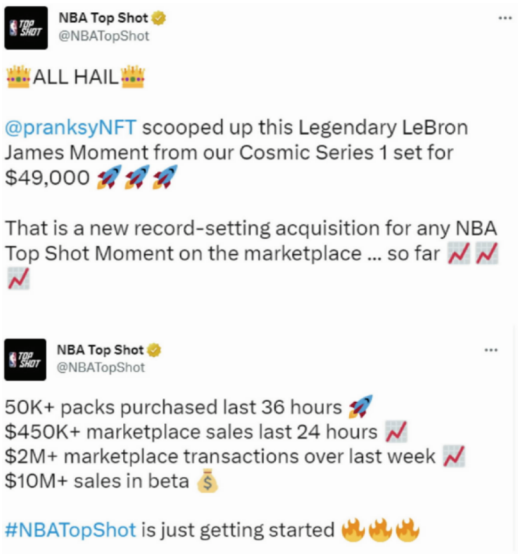
95. *Ripple Labs*, 2023 WL 4507900, at *6.

96. *See* SEC v. Terraform Labs Pte. Ltd., No. 23-CV-1346, 2023 WL 8944860, at *13 (S.D.N.Y. Dec. 28, 2023) (finding Terraform's interest programs to be securities).

craving more certainty. As discussed below in the section on the major questions doctrine, if, as a policy matter, faster certainty is desirable, then it would likely be Congress and not the SEC who could provide it.

2. Non-Fungible Tokens

Caselaw also has lessons for whether sales of NFTs constitute securities under the *Howey* test. In *Friel v. Dapper Labs, Inc.*, the Southern District of New York denied Dapper Labs' motion to dismiss claims that its sales of NBA Top Shot Moments NFTs (short videos of key moments in the NBA), violated securities laws.[97] The court found that Dapper Labs' direct sales of multi-packs of NFTs to purchasers, and its control of a marketplace for resale of the NFTs that generated commissions on sales to Dapper Labs, could constitute investment contracts or securities.[98] In particular, the court highlighted that even though each Moments NFT had a different value, the success of all Moments NFTs were tied together and to the success of the enterprise or project as a whole.[99] Moreover, the court examined marketing materials, such as tweets, to find that Dapper Labs' "public statements and marketing materials objectively led purchasers to expect profits."



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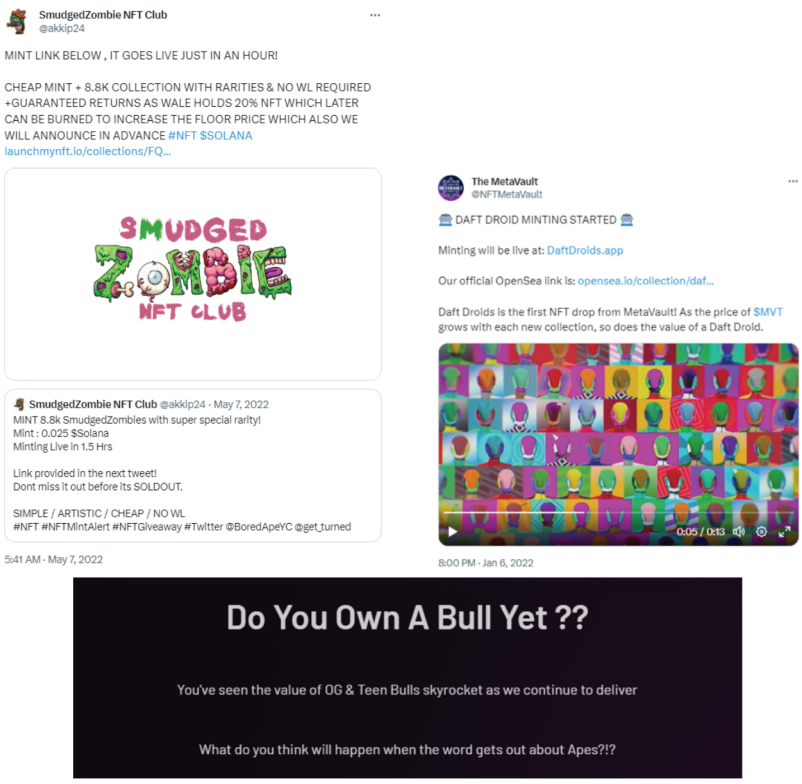
97. Friel v. Dapper Labs, Inc., No. 1:21-CV-05837 (VM), 2023 WL 2162747 (S.D.N.Y. Feb. 22, 2023).
98. *Id.* at *11–12.
99. *Id.* at *14.
100. *Id*. at *17.

As the court noted, "although the literal word 'profit' is not included in any of the Tweets, the 'rocket ship' emoji, 'stock chart' emoji, and 'money bags' emoji objectively mean one thing: a financial return on investment."[101] Nonetheless, factual questions remained about whether purchasers mostly obtained the NFTs for investment use or consumptive use (to simply enjoy the videos, art, and collection of moments).[102] The case is ongoing and scheduled for jury trial in two years.[103] It is possible a summary judgement decision, which would occur after the close of fact discovery in November 2024, would more definitively resolve the question of when NFTs sales are securities and how this might extend to other NFT sales structures.[104] Although some NFT projects now market their NFTs as having a particular consumptive utility, or as being utility tokens instead of securities, by offering rights to tickets for events, access to gaming or entertainment, community perks, or intellectual property transfers or licenses, the SEC has taken a narrow view of what constitutes a utility token or consumptive use.[105] *Dapper Labs* will address this question.[106] Courts deciding the issue would apply *Howey* and look to the reality of investor expectations, not the formalities of whether project owners called their tokens utility-bearing.[107]

In recent years, many NFT projects have sold coins, NFTs, or other tokens directly from their platforms to the public and not restricted purchases to accredited investors.[108] These projects are at risk of violating U.S. securities laws if they are offered or sold to members of the U.S. public and if they constitute a type of instrument the SEC considers to be a security. NFT projects that make direct sales to purchasers, make frequent promises of explosive returns, have guaranteed floor

101. *Id.*
102. *Id.* at *18 (suggesting that in some cases intellectual property rights transfers could form the basis for some consumptive utility if the NBA Top Shots Terms of Use had offered that option, but the terms restricted purchasers from making unapproved uses of the Moments).
103. Friel v. Dapper Labs, Inc., No. 1:21-CV-05837 (April 18, 2023) No. 51 (scheduling order and case management plan).
104. *See id.*
105. Nikhilesh De & Mahishan Gnanaseharan, *SEC Chief Touts Benefits of Crypto Regulation*, CoinDesk (Sept. 13, 2021, 2:47 AM), https://www.coindesk.com/markets/2018/04/05/sec-chief-touts-benefits-of-crypto-regulation/ (quoting former SEC chair Clayton, noting that if a startup is "offering something that depends on the efforts of others, it should be regulated as a security," and, "If I have a laundry token for washing my clothes, that's not a security. But if I have a set of 10 laundry tokens and the laundromats are to be developed and those are offered to me as something I can use for the future and I'm buying them because I can sell them to next year's incoming class, that's a security").
106. *Dapper Labs*, 2023 WL 2162747 at *18.
107. *See* SEC v. W.J. Howey Co., 328 U.S. 293, 299 (1946).
108. *See, e.g.*, Ape Mint, Bulls and Apes Project, https://mint.bullsandapesproject.com/ape-mint [https://perma.cc/A47E-C96N] (last visited Oct. 16, 2023).

prices or lowest prices, hyped-up, celebrity-inflated marketing of "going to the moon," and other suggestions of financial return will likely constitute unregistered securities.[109] Indeed, throughout 2022, as the price of Bored Ape Yacht Club NFTs spiked, thousands of new NFT collections were launched and marketed in ways that posed a clear risk of security violations. For example, many NFT projects sold collections of 8,000 to 10,000 profile picture (PFP) images directly to consumers while marketing the potential for all items in the collection to increase in value or suggesting investment returns:



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When an entity directly sells tokens (whether coins or NFTs) as part of a group or collection that rise and fall in value together, and which are promoted as items that will be an investment, the entity

109. *See generally* Dapper Labs, No. 1:21-CV-05837 (VM), 2023 WL 2162747 at *17 (S.D.N.Y. Feb. 22, 2023); SEC v. Ripple Labs, Inc., No. 20 Civ 10832 (AT), 2023 WL 4507900, at *6 (S.D.N.Y. July 13, 2023).

110. BULLS AND APES PROJECT, *supra* note 108.

risks those tokens being labeled as securities. On August 28, 2023 the SEC issued its first action against NFT seller, Impact Theory, ordering it to pay fines and refund sales of its Founder's Keys NFTs, which were marketed as investments that would allow Impact Theory to build "tremendous value" for purchasers.[111] This initial SEC action conforms with the caselaw to date on securities in both the NFT context, like *Dapper Labs*, and the broader blockchain securities caselaw.

3. Are Proof of Stake Models Securities?

The Ethereum blockchain's shift to proof-of-stake will also pose novel questions to regulators and courts: do platforms and blockchains that provide staking rewards sell securities? Before assessing the *Howey* test factors, courts and regulators must first acquire a careful understanding of the nature of staking technology. Independently earning staking rewards requires those who are "validators" to deposit a stake (32 ETH if running independently) as collateral to verify the trustworthiness of their validator system (in contrast to proof-of-work systems that use difficulty of a cryptographic problem to verify trust).[112] Then, the validator must perform significant and undisrupted computing work to maintain that trust: "[A] user must . . . run three separate pieces of software: an execution client, a consensus client, and a validator."[113] Validators need to timely propose new blocks, send the blocks to other nodes, and, at other times, vote to verify others' proposed blocks.[114] Validators perform the tasks of verification using computing resources they own or by purchasing cloud or borrowed computing resources; if their computing resources are insufficient for the task they could lose their collateral staked ETH.[115] It is only by doing this computing work that independent validators receive staking rewards.[116] These rewards are not paid by the creators of the staking technology, such as the creators of Ethereum, but by those who engage in the transactions benefitting from use of that validator.[117] Analogizing loosely to *Ripple Labs*, courts could determine that staking rewards are more akin to payment for services or work performed, like

111. Impact Theory, Exchange Act Release No. 11,226, (Aug. 28, 2023); Elizabeth Napolitano, *SEC Issues First Enforcement Action Targeting NFTs*, CoinDesk (Aug. 28, 2023), https://www.coindesk.com/policy/2023/08/28/sec-issues-first-enforcement-action-targeting-nfts/ [https://perma.cc/2XYB-273B].
112. @vdusart et al., *supra* note 25.
113. *Id.*
114. *Id.*
115. *Id.* ("The validator is expected to maintain sufficient hardware and connectivity to participate in block validation and proposal. In return, the validator is paid in ETH (their staked balance increases).").
116. *Id.*
117. *See id.*

compensation to employees, rather than an investment contract and therefore do not constitute the sale of securities.

Staking becomes more complex when resources are pooled. Some exchanges like Coinbase allow users to stake their Ethereum with Coinbase's help, using less than the full 32 ETH in minimum stake for individual validators, with Coinbase coordinating the computing resources for the validation work and the pooling of multiple users' ETH to meet the staking minimum.[118] In these cases users who stake their ETH with Coinbase will earn a pro rata share of the money they would receive if independently running an ETH validator, minus Coinbase fees of 25% of earned ETH rewards.[119] Coinbase frames ETH staked with Coinbase as owned by the user, subject to risk of loss only if the validator is slashed by the network (loses its stake due to failed validation), and with rewards only passed through from the protocol rather than earned from Coinbase.[120] In response to a pending lawsuit by the SEC asserting that Coinbase's staking rewards program is an unregistered security, Coinbase argues that it is merely providing validator services as a fee-based IT infrastructure and computing service.[121] It similarly argues that the funds are not subject to risk of loss or increase in value based on the efforts of Coinbase, but rather rewards are earned based on the protocols of the blockchain.[122] Earlier in 2023, the creators of Kraken settled SEC charges that its staking services constituted securities, agreeing to pay $30 million and cease offering staking rewards.[123] Courts applying *Howey* to determine if staking rewards are securities will look not to the labels placed upon the services, but their commercial reality and expectations of those contributing their funds.[124] Are consumers expecting the value of the

118. *See Earn Rewards with Staking*, COINBASE HELP, https://help.coinbase.com/en-au/coinbase/coinbase-staking/rewards/earn-rewards-with-staking [https://perma.cc/UP5F-5R8P] (last visited Aug. 3); COINBASE HELP, https://help.coinbase.com/en/coinbase/trading-and-funding/pricing-and-fees/fees [https://perma.cc/3JD9-T9NV] (last visited Sept. 4, 2023).

119. *See* COINBASE HELP, *supra* note 118.

120. *Id.*; *Staking Risks*, COINBASE HELP, https://help.coinbase.com/en/coinbase/coinbase-staking/staking/staking-risks [https://perma.cc/3HN7-8BKD] (last visited Aug. 3, 2023) ("Staking rewards come from the underlying crypto network, not Coinbase. Because protocol rules and network conditions can change, past rewards do not necessarily predict future staking payouts. Moreover, downtime for Coinbase's hardware, software, or the network itself could result in lost rewards. Coinbase does not guarantee that you will earn any reward, and you have no right to a reward unless it is received by Coinbase.").

121. Motion for Judgement on the Pleadings at *27–30, SEC v. Coinbase, Inc., No. 1:23-CV-04738 (S.D.N.Y. Aug. 4, 2023).

122. *Id.*

123. S.E.C., *Kraken to Discontinue Unregistered Offer and Sale of Crypto Asset Staking-As-A-Service Program and Pay $30 Million to Settle SEC Charges* (Feb. 9, 2023), https://www.sec.gov/news/press-release/2023-25 [https://perma.cc/GZ7N-S4VP].

124. *See* SEC v. W.J. Howey, 328 U.S. 293, 299 (1946).

assets to grow like an investment contract based on the efforts of a central promoter who sells the asset? In the ongoing *Coinbase* case, the court denied Coinbase's motion to dismiss the SEC's claims regarding staking rewards, finding that Coinbase acted as a promoter by managing staking services, pooling funds, and making staking easier for customers than solo staking.[125] Nonetheless, the court's decision does not resolve whether a particular cryptocurrency using proof-of-stake is a security; the case only addresses whether Coinbase's pooling service for staking rewards is a security offered by Coinbase. The securities status of cryptocurrencies that offer staking remains unresolved at the time of this publication.

4. Exchanges, Broker-Dealers, & Know Your Customer Laws

The SEC filed suit against Coinbase in June 2023 also asserting that, among other allegations, Coinbase was operating as an unregistered broker, an unregistered exchange, and an unregistered clearing agency by serving as a platform to buy and sell cryptocurrencies.[126] Under the Securities Exchange Act, a broker is someone "engaged in the business of effecting transactions in securities for the account of others,"[127] and an exchange is an entity that "provides a market place or facilities" for selling securities.[128] Brokers, exchanges, and clearing houses[129] must register with the SEC and follow certain disclosure and information collection rules.[130] One of these requirements is the Know Your Customer Rule, which requires brokers to keep records of "essential facts" on each customer.[131] Platforms that effectuate securities transactions could be found to be unregistered exchanges or brokers. In the SEC's suit, Coinbase argued that it was not a broker as to simple bid/ask asset sales of cryptocurrency on its platform because cases like that involving XRP have found public exchange sales to not be securities transactions.[132] However, the court found that transactions on public exchanges can be sales of securities because of how they are promoted (such as sales of SOL and CHZ where the founders promised future investment results, promised deflationary mechanisms, and

125. Order, SEC v. Coinbase, Inc., No. 1:23-cv-04738 at 78 (S.D.N.Y. March 27, 2024).
126. Complaint, SEC v. Coinbase, Inc., No. 1:23-cv-04738 (S.D.N.Y. June 6, 2023) (The SEC also alleges that Coinbase sold unregistered securities by offering Ethereum staking services).
127. 15 U.S.C. § 78c(a)(4)(A).
128. 15 U.S.C. § 78c(a)(1).
129. A clearing house is a person "who acts as an intermediary in making payments or deliveries . . . of securities transactions." 15 U.S.C. § 78c(a)(23)(A).
130. *E.g.*, 15 U.S.C. § 78o (requiring registration of brokers and dealers).
131. *2090. Know your Customer*, FINRA RULES, https://www.finra.org/rules-guidance/rulebooks/finra-rules/2090 [https://perma.cc/VL83-YBUE] (last visited Oct. 21, 2023).
132. Motion for Judgement on the Pleadings, *supra* note 121.

urged purchases on third party exchanges), and therefore Coinbase could be a broker or exchange.[133] Some blockchain platforms collect Know Your Customer information out of an abundance of caution.[134]

5. Major Questions Doctrine

Coinbase's motion in the lawsuit brought by the SEC urged the court to dismiss SEC's claims on the grounds that the SEC's expansive reading of securities law is a significant policy decision that should be left to Congress under the major questions doctrine, but the court denied it.[135] In 2022, the Supreme Court invoked this substantive canon of statutory interpretation, requiring agencies seeking regulatory authority over an issue of great "economic and political significance" to find a clear statement of Congress's delegation of authority on that topic to the agency before the agency may act.[136] The Court used this major questions doctrine to find that the Environmental Protection Agency lacked authority to regulate shifts to lower-emitting energy sources.[137] In this Author's view, the major questions doctrine expands older substantive interpretation canons—rules that judges use to change the interpretation of statutes away from a statute's text on the basis of beliefs about constitutional authority or values—originating with the constitutional avoidance canon.[138] The major questions doctrine and

133. Order, SEC v. Coinbase, Inc., No. 1:23-cv-04738 at 55 (S.D.N.Y. March 27, 2024).

134. Vishal Chawla, *Yuga Labs' Otherside Metaverse Land Auction Imposes KYC Checks*, THE BLOCK (Apr. 26, 2022), https://www.theblockcrypto.com/linked/143535/yuga-labs-otherside-metaverse-land-auction-imposes-kyc-checks [https://perma.cc/FBY4-X3LT] (noting that Yuga Labs, the creators of Bored Ape Yacht Club, opted to use Know Your Customer data collection when it launched the mint of digital land in its metaverse in April 2022).

135. Motion for Judgement on the Pleadings, *supra* note 121, at *20–22; Order, SEC v. Coinbase, Inc., No. 1:23-cv-04738 at 35 (S.D.N.Y. March 27, 2024).

136. West Virginia v. EPA, 142 S. Ct. 2587, 2607–08 (2022); *see generally* Kate R. Bowers, CONG. RSCH. SERV., IF12077, THE MAJOR QUESTIONS DOCTRINE (2022) (summarizing a potential history and applications of major questions doctrine).

137. *West Virginia*, 142 S.Ct. at 2607–08.

138. Under the constitutional avoidance canon, judges may interpret a statute narrowly to avoid a reading that raises a serious constitutional question. *Cf.* Nat. Lab. Rel. Bd. v. Cath. Bishop of Chi., 440 U.S. 490 (1979) (finding that a religious school was not an "employer" under national labor laws because so finding would "call upon the Court to resolve difficult and sensitive questions arising out of the guarantees of the First Amendment Religion Clauses"). Courts have used this doctrine to require Congress to make a clear statement of its intent for a statute to extend into any area that raises serious constitutional questions, such as requiring the addition of "including religious employers" to the statutory definition of "employer" before a court would adopt an interpretation of "employer" that includes them. *Id.* This Author disagrees with the various substantive canons arising from Constitutional Avoidance as impermissibly expanding the role of judges into policymaking instead of merely interpreting statutes according to their text (finding them valid or invalid under our Constitution and thereby forcing Congress to write a new statute that is not unconstitutional).

other substantive canons could be considered either a fair application of a constitutional value of nondelegation,[139] or a needless burden on Congress to anticipate the details of major societal and technological change in the text of each statute, placed upon it by judges unwilling to interpret broad, forward-looking statutes according to their plain text.

Even under the Supreme Court's current expansive major questions doctrine, however, courts will not use the interpretive canon to place limits on a court's own determination of whether a particular asset sale is a sale of a security. Prior applications of the doctrine only restricted agency conduct like rulemaking, never a court's own determination of whether private conduct violated a Congressional statute.[140] Here, when a court decides whether a blockchain sale is a sale of a security, the court is interpreting the meaning of a security under the Securities Act.[141] The definition of a security is specified in the statute itself and courts have established rules further interpreting that definition.[142] From citrus groves and beavers to companies and whiskey, courts have interpreted the statute as extending to a variety of asset types that are offered or sold as investment contracts.[143] Most prior cases asking whether blockchain projects are securities addressed straightforward questions on the application of prior judicial precedent under *Howey*, like whether a seller of new blockchain tokens was making promises of investment returns to buyers.[144] Application of the major questions doctrine to limit the scope of a court's own interpretation of what falls within the *Howey* test is inappropriate and would be an expansion from prior precedent such as *West Virginia v. EPA*. Therefore, in the Coinbase case and otherwise, courts do not expand the major question doctrine to prohibit a court's finding that a transaction is a security or prevent longstanding enforcement powers.

The SEC also recently denied Coinbase's separate petition requesting that the SEC engage in rulemaking on which crypto transactions are securities in order to provide more certainty to the industry.[145] The SEC stated that it did so in part because the SEC "disagrees . . . that application of existing securities statutes and regulations to crypto asset securities . . . is unworkable."[146] This decision was met

139. *See* U.S. CONST. art. I, § 1 ("All legislative Powers herein granted shall be vested in a Congress of the United States").
140. *See, e.g.*, *West Virginia*, 142 S. Ct. at 2607–08; *see also* Biden v. Nebraska, 143 S. Ct. 2355 (2023) (finding the Secretary of Education lacked authority to establish a particular loan forgiveness program).
141. The Securities Act of 1933, § 2(a)(1), 15 U.S.C. § 77b(a)(1) (defining a security).
142. SEC v. W.J. Howey, 328 U.S. 293, 298–99 (1946); 15 U.S.C. § 77b(1).
143. *See Howey*, 328 U.S. at 299 (citrus groves); S.E.C. v. Ripple Labs, Inc., No. 20 Civ. 10832 (AT), 2023 WL 4507900, at *7 (S.D.N.Y. July 13, 2023) (collecting a list of varied assets found to be sold as securities).
144. *E.g.*, SEC v. Telegram Grp. Inc., 448 F. Supp. 3d 352, 379 (S.D.N.Y. 2020).
145. Letter from Vanessa A. Countryman, *supra* note 69.
146. *Id.*

unfavorably by members of Congress, who called the SEC's choice not to regulate "shameful,"[147] and by individual SEC Commissioners who warned that "addressing [new technology] is a core part of being a responsible regulator."[148] However, the SEC's declining to regulate through rulemaking might be entirely rational, either because old law is in fact sufficient, or (or potentially and) because the SEC is trying to avoid the risk of courts striking that regulation down under the major questions doctrine. If the SEC takes regulatory action such as establishing new exchange types or registration requirements for exchanges of cryptocurrencies, issuing rulemaking that requires registration of staking services, or affirmative conduct analogous to prior cases, then the SEC's risks that courts will strike down the regulation. Perhaps the SEC chose to focus on litigation relating to these topics instead of regulatory action in part in an effort to force courts, rather than the SEC, to decide the boundaries of security laws in the blockchain space. Doing so avoids the SEC issuing rulemaking or guidance in a way that could expose the SEC to challenges under the major questions doctrine.

It is true that a court determination that sales of specific cryptocurrencies on public exchanges are sales of securities or that all staking rewards are securities transactions would have vast unintended consequences; it would undermine the foundation of publicly-tradable cryptocurrencies and could douse the validation network of proof-of-stake technology (a more environmentally friendly blockchain technology than proof-of-work models).[149] Nonetheless, the current contexts in which the major questions doctrine have been raised, such as in the *SEC v. Coinbase* case, do not implicate the type of agency conduct that was at issue in cases where the major questions doctrine was invoked. Moreover, the doctrine is an unwise interpretive canon that undermines a faithful agent approach to judicial interpretation by disregarding Congressional text.

147. Patrick McHenry, @PatrickMcHenry, X (Dec. 15, 2023), https://twitter.com/PatrickMcHenry/status/1735768891526189183 [https://perma.cc/5MLW-3MTJ]; *see also* Tom Emmer, @GOPMajorityWhip, X (Dec. 15, 2023), https://x.com/GOPMajorityWhip/status/1735716723393704226 [https://perma.cc/S95C-664S] (calling SEC's failure to regulate "wrong and a clear violation of the SEC's mandate").

148. Statement of Commissioners Hester Peirce and Mark Uyeda, Statement Regarding Denial of Petition for Rulemaking (Dec. 15, 2023), https://www.sec.gov/news/statement/peirce-uyeda-petition-121523 [https://perma.cc/B6AD-95DX] ("We disagree with the Commission's decision . . . . In our view, the Petition raises issues presented by new technologies and other innovations, and addressing these important issues is a core part of being a responsible regulator . . . . Then, using what has been learned, the Commission could issue guidance or engage in rulemaking as needed.").

149. @vdusart et al., *Proof-of-Stake (POS)*, ETHEREUM.ORG (last updated Jul. 25, 2023) https://ethereum.org/en/developers/docs/consensus-mechanisms/pos/ [https://perma.cc/2986-RGB9] (Sept. 25, 2023); *Ethereum's energy expenditure*, ETHEREUM.ORG (Oct. 20, 2023), https://ethereum.org/en/energy-consumption/ [https://perma.cc/VR3P-V3KQ].

B. DAOs and Corporate Governance

A decentralized autonomous organization (DAO) is an organizational structure in which decision-making, power, and sometimes financial distributions or purchases are made through a system of publicly-visible voting by token holders, typically weighted based on ownership, and executed in most cases using smart contracts on the blockchain.[150] Most states do not explicitly allow corporate entity status for DAOs[151], although Wyoming is one of the few exceptions; Wyoming allows DAOs to register as a special form called a DAO LLC.[152] Wyoming-registered DAOs may vest management decisions in its members and any smart contracts governing their operation, but they must disclose the smart contracts used for governance, must ensure that the smart contracts can be updated,[153] and may not be foreign-owned.[154] Tennessee[155] and Utah[156] have since also passed laws allowing DAOs to be registered in the state. Laws allowing registration of DAOs and giving them LLC-like treatment can provide the DAO with favorable tax treatment and allow its members to be shielded from personal liability for actions of the DAO.[157]

If a DAO fails to register as an official corporate form with limited liability, courts can treat individual members as personally liable for financial damages levied against the DAO.[158] For example, in a case against Ooki DAO, a federal court in California found that the DAO, lacking any other official corporate form, could be considered a general partnership between its individual founders.[159] As a result, the court found that the founders could face unlimited personal liability for any damages or losses caused by the platform, such as compensation to victims of phishing attacks.[160] In the case of Ooki DAO, it did not help the founders' cause that they allegedly chose not to register under an

150. Reiff, *supra* note 36.
151. E.g., California and a number of other states don't have separate corporate forms for DAOs. *Cf.* Sarcuni v. bZx DAO, No. 22-CV-618-LAB-DEB, 2023 WL 2657633, at *8 (S.D. Cal. Mar. 27, 2023)."
152. WYO. STAT. ANN. § 17-31-104 (West 2023) ("A decentralized autonomous organization is a limited liability company whose articles of organization contain a statement that the company is a decentralized autonomous organization . . .").
153. WYO. STAT. ANN. § 17-31-109 (West 2023).
154. WYO. STAT. ANN. § 17-31-116 (West 2023).
155. TENN. CODE ANN. § 48-250-103 (West 2023).
156. Anthony Clarke, *Utah DAO Act: How the Law Was Made and What it Means for Decentralized Business*, COINTELEGRAPH (April 27, 2023), https://cointelegraph.com/news/utah-dao-act-how-the-law-was-made-and-what-it-means-for-decentralized-business [https://perma.cc/Y8N2-N94T].
157. *Id.*; WYO. STAT. ANN. § 17-31-104 (West 2023).
158. *See id.*
159. Sarcuni v. bZx DAO, No. 22-CV-618-LAB-DEB, 2023 WL 2657633, at *8 (S.D. Cal. Mar. 27, 2023) ("[T]he partners elected to forgo registering the DAO as an LLC or other legal entity with limited liability.").
160. *Id.*

official state corporate form because they wanted to use the DAO to evade compliance with U.S. laws and regulations.[161] In states that lack a DAO LLC corporate form, DAO founders might register using whatever corporate forms are available in their state of registration, such as Wisconsin's unincorporated cooperative association (which allows for management by vote and limitation of liability for voting members),[162] Colorado's limited cooperative association,[163] or a simple LLC. An alternative idea is to form a business trust for flexibility in corporate structuring.[164] Although these alternative forms do not perfectly allow for corporate governance solely by DAO votes, they can at least provide some collaborative governance and reduce the risk of personal liability for founders relative to no corporate form at all.

Companies who handle Bitcoin and other cryptocurrencies will also be responsible for compliance with state and federal money laundering laws. For example, Bitcoin ATMs must comply with money transmitter licensing obligations under state law.[165] Moreover, other laws such as those prohibiting price manipulation of commodities can also apply to blockchain transactions.[166]

IV. INTELLECTUAL PROPERTY LAW & BLOCKCHAIN

Intellectual property law, perhaps more than any other area of law, should be well-suited to adapt to new changes in technology because its purpose is to incentivize innovation.[167] If intellectual property law cannot effectively apply to new technologies in Web 3.0, it suggests more of a concern with intellectual property law's future-proofing against all new technologies than it indicates the need for a specific new framework in blockchain. The application of intellectual property law to blockchain demonstrates the key principle set forth in this Article: old laws can often reach to new technologies and societal changes, with a few exceptions: First, new property rights might be necessary to enable

161. *Id.* at *9 (quoting one founder as stating, "[W]hat we're going to do is take all the steps possible to make sure that when regulators ask us to comply, that we have nothing we can really do because we've given it all to the community.").
162. WIS. STAT. ANN. § 193.505 (West 2023).
163. Art. 58, Title 7, COLO. REV. STAT. (West 2012).
164. Reyes, *supra* note 6, at 414–18.
165. *See*, *e.g.*, *Bitcoin ATMs Becoming Popular and Face New Licensing Standards to Protect Ohio Consumers*, OHIO DEPARTMENT OF COMMERCE (Sept. 14, 2022), https://com.ohio.gov/about-us/media-center/news/bitcoin-atms-becoming-popular-and-face-new-licensing-standards-to-protect-ohio-consumers [https://perma.cc/32M8-REYH].
166. *E.g.*, Complaint, SEC v. Eisenberg, No. 1:23-CV-00503 (S.D.N.Y. Jan. 20, 2023) [https://perma.cc/9AHN-7MNZ]; (alleging that Eisenberg manipulated the price of cryptocurrency swaps on the Mango Markets trading platform to obtain $116 million dollars).
167. *See* U.S. CONST., art I, §. 8, cl. 8 (noting intellectual property law's purpose "[t]o promote the progress of science and useful arts").

private bargaining in spaces without clear ownership. Second, if new technology creates a new type or degree of harm, laws that protect against those harms should be established or modified.

One example of where Web 3.0 creates a new scope of harm is the widespread unauthorized depiction of real people to sell blockchain projects. To help with this, AI should be subject to more restrictions to prevent harm than currently exist, such as better protections against harms to an individual's privacy or misappropriation of their name, image, or likeness. The Copyright section discussed below provides yet another example of where the law might need to change. Innovations in algorithmically-generated or artificial-intelligence-generated content, which are common in blockchain software and NFT projects, should receive more rights under existing law, such as thin copyright that protects against verbatim copying for the same purpose.

A. Patentability and Ownership of Blockchain Tech

1. Patents on Blockchain

Patents can protect new and non-obvious technological and design innovations in blockchain and Web 3.0, just as they can in any other area of technology, if they meet the requirements for patentability.[168] However, as will be discussed in the below paragraphs, blockchain technologies struggle to comply with requirements, such as patentable subject matter hurdles.

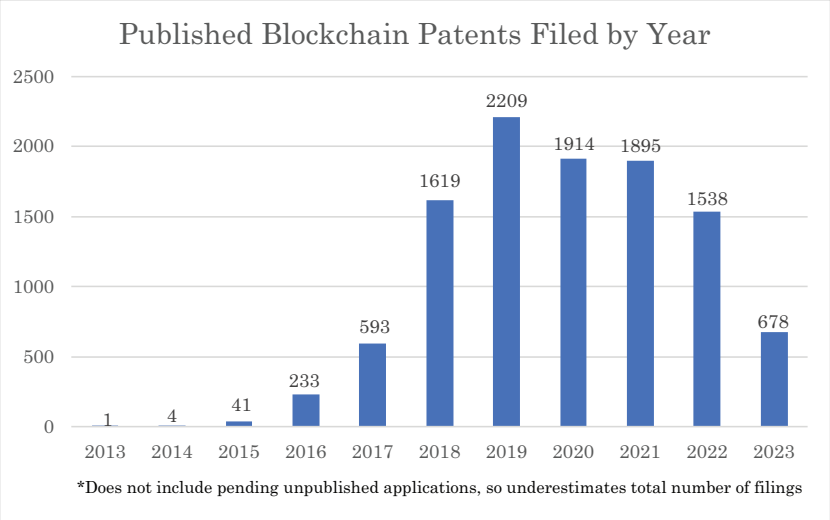
Patents on blockchain technologies can be difficult to obtain in the U.S. in light of subject-matter eligibility restrictions.[169] Section 101 of the patent act defines patent-eligible inventions as "any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof,"[170] but the current Supreme Court has stated that this test excludes the patenting of "abstract ideas."[171] The abstract ideas test has been used to block patenting of software for mitigating settlement risk in financial transactions,[172] organization of human activities like commerce,[173] mathematical formulas and algorithms implemented on a computer,[174] and some uses of cryptography.[175]

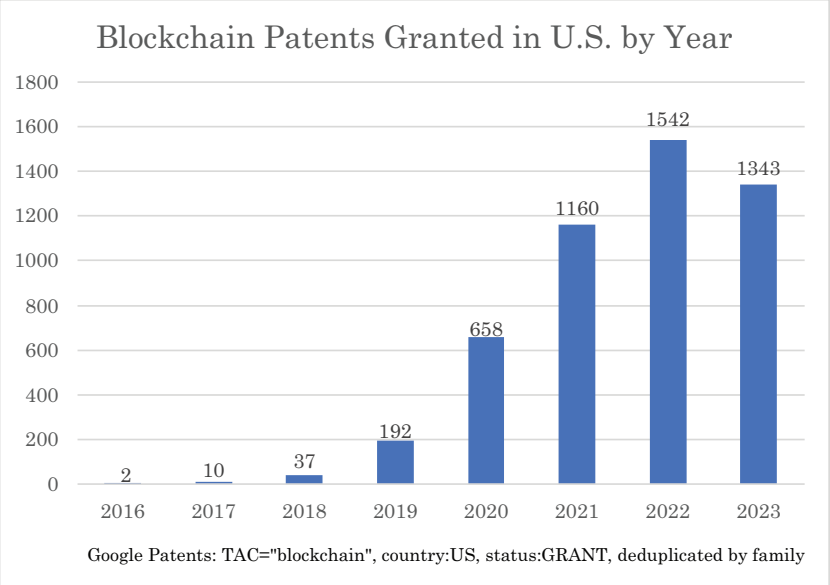
168. *See* 35 U.S.C. §§ 101, 102, 103.
169. *See* 35 U.S.C § 101.
170. *Id.*
171. Diamond v. Chakrabarty, 447 U.S. 303, 309 (1980) ("The laws of nature, physical phenomena, and abstract ideas have been held not patentable.").
172. Alice Corp. Pty. v. CLS Bank Int'l, 573 U.S. 208, 218 (2014).
173. *Id.*
174. *See* Gottschalk v. Benson, 409 U.S. 63, 73 (1972); *but see* Enfish, LLC v. Microsoft Corp., 822 F.3d 1327, 1337 (Fed. Cir. 2016) (finding self-referential table for computer databases not ineligible).
175. *See* PersonalWeb Techs. LLC v. Google LLC, 8 F.4th 1310, 1318 (Fed. Cir. 2021), *cert. denied*, 142 S. Ct. 1445 (2022).

In the only court decision related specifically to blockchain patent subject-matter eligibility decided to date, *Rady v. Boston Consulting Group, LLC*, Rady asserted that his employer, BCG, infringed his patent on a method to record unique physical signatures of gemstones to the blockchain to help track authenticity.[176] Finding that the patent was directed to patent-ineligible subject matter, the court dismissed the patent infringement claims as a matter of law.[177] The court applied the *Alice* test, from the Supreme Court's decision in *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, which asks two questions: (1) "whether the claims at issue are directed to one of those patent-ineligible concepts" and (2) if yes, considering the invention as a whole, "whether the additional elements transform the nature of the claim . . . sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [ineligible concept] itself."[178] Specifically, in *Rady* the court noted that claims regarding the use of blockchains for gemstones were directed merely to "collecting, analyzing, and storing data," an abstract concept, and focusing the claims to track physical objects does not make them any less abstract.[179] Moreover, the court found, "a blockchain is merely a ledger," an abstract concept not entitled to patent protection.[180]

The Patent Trial and Appeal Board (PTAB), an administrative tribunal at the United States Patent and Trademark Office (USPTO), has also found some blockchain patents ineligible under Section 101. In 2021, the PTAB held that a claim for account reconciliation of smart contracts was directed to a basic commercial idea of reconciliation, and the smart contract limits on the claim were merely routine and conventional steps that did not transform the nature of the claim into more than the ineligible idea.[181] When a patent claim merely adds routine and conventional steps known in the field to an otherwise abstract idea or basic principle, this cannot transform the claim into eligible subject matter.[182]

176. Rady v. Boston Consulting Grp. LLC, No. 1:20-CV-02285 (ALC), 2022 WL 976877, at *2 (S.D.N.Y. Mar. 31, 2022).
177. *Id.*(at the time of this writing, the decision was pending appeal at the U.S. Court of Appeals for the Federal Circuit).
178. Alice Corp. Pty. V. CLS Bank Int'l, 573 U.S. 208, 217–18 (2014).
179. *Rady*, 2022 WL 976877, at *3.
180. *Id.*
181. *Ex Parte* Vijay Madisetti and Arshdeep Bahga, Appeal No. 2021-000148 (T.T.A.B. 2019).
182. Mayo Collaborative Servs. v. Prometheus Lab'ys, Inc., 566 U.S. 66, 79 (2012).





Nonetheless, the USPTO has granted large numbers of patents related to blockchain technology: 4,944 or more at the time of this writing.[183] Many of these granted blockchain patents do not necessarily

183. Based on a search of patents.google.com for U.S.-granted patents with the keyword "blockchain" in the claims, title, or abstract and deduplicated by family. Note that Google's deduplication understates totals, but trends are still useful.

claim the fundamental technology itself, but instead claim improvements to and applications of the technology, such as inventions that improve hardware efficiency in Bitcoin mining through improved compression, for example.[184] The *Rady* decision has not seemed to slow the pace of US patent applications or grants dramatically, as shown in the charts above, although the slight downtick might be because applicants are using different words to describe technologies that nonetheless apply to the blockchain.

Total U.S. patent filings for all technology areas dipped slightly in 2020 and 2021, likely due to the coronavirus pandemic.[185] Because pending unpublished applications are not counted, the charts also underestimate the numbers of applications in the last two years. Complete data for 2021–2023 would be needed to draw firm conclusions, but it seems plausible that blockchain patents have not slowed as significantly as the price of cryptocurrencies and could be continuing.

Web 3.0 tools can also suffer in the race to patents due to lack of novelty or obviousness over what has already been disclosed to the public in publications, white papers, or prior uses. The fundamental technology behind Bitcoin is not at risk of being captured by a patent because patents cannot claim inventions that were known or used by others or published in a patent or printed publication by another before filing.[186] Nonetheless, as shown in the charts above, hundreds of patents are granted every year on blockchain inventions that go beyond the previously-disclosed fundamental innovations of distributed ledger technology, covering topics like mining compression, blockchains for resource and inventory management, and more. Some of the most prolific patentees in the blockchain space are IBM, Alibaba, Bank of America, Mastercard, Visa, Microsoft, Dell, Toyota, and others.[187] Yet, with the high risk of blockchain patents deemed abstract under the *Alice* test for patent subject matter eligibility, patentees might be justified in seeking other ways to protect blockchain innovations, such as with trade secret or by relying solely on trademark or copyright law.

184. U.S. Patent No. 11,113,676 (filed Nov. 19, 2014).

185. Shayne Philips, *2021 Anaqua Analysis of USPTO Patenting Statistics*, ANAQUA (Feb. 2, 2022), https://www.anaqua.com/resource/2021-anaqua-analysis-of-uspto-patenting-statistics-blog/.

186. *See* 17 U.S.C. § 102.

187. Nils-Gerrit Wunsch, *Largest Patent Owners in Blockchain in the United States in 2022, by Number of active Patent Families*, STATISTA (July 26, 2023), https://www.statista.com/statistics/1022077/blockchain-patent-owners-united-states-authority/ [https://perma.cc/KC48-6ZCN]; Thomas Isaacson, *The Blockchain Patent Landscape Shows Accelerating Growth*, IPWATCHDOG (Dec. 4, 2020), https://www.ipwatchdog.com/2020/12/04/the-blockchain-patent-landscape-shows-accelerating-growth/id=127922/ [https://perma.cc/R378-WF76].

2. Blockchain for Patents

Some might dream that blockchain smart contracts could one day be used to automate patent licenses and purchase transactions and track and verify patent ownership. Although the technology is still new, companies such as IBM in partnership with IPwe have announced plans to develop a Global Patent Registry (GPR), with the goal of enabling transparent tracking of patent ownership and transactions worldwide.[188] Nonetheless, there is an inherent risk when using any automated system for tracking valuable items because code is often fallible. Moreover, using blockchain to accurately track and automate items like royalty payments requires perfect adoption and compliance, using blockchain for all relevant transactions, because otherwise any transaction not entered into the blockchain could escape automated calculations. This is likely unfeasible.

B. Trademark Issues in NFTs

Traditional trademark law issues can arise in blockchain and NFT projects just as for other goods and services, such as disputes over product naming.[189] In these cases, courts can readily apply the traditional likelihood of confusion test, assessing factors like the similarity of the marks and evidence of likely confusion in the marketplace to determine infringement.[190] Despite this, a number of NFT creators facing trademark lawsuits have advanced the defense that their creations are artistic expression, not trademark misappropriation.[191]

For example, Ryder Ripps created a new NFT collection called Ryder Ripps Bored Ape Yacht Club, which used the same digital image file pointers as Bored Ape Yacht Club NFTs by Yuga Labs and satirized

188. Erich Spangenberg, *Disrupting the Patent Ecosystem with Blockchain and AI*, IBM (Feb. 1, 2021), https://www.ibm.com/blogs/blockchain/2021/02/disrupting-the-patent-ecosystem-with-blockchain-and-ai/ [https://perma.cc/3E8D-YRUR].

189. Zamfir v. CasperLabs*, LLC*, No. 21-CV-474, 2022 U.S. Dist. LEXIS 194566 at *8–9 (S.D. Cal. Oct. 25, 2022) (denying motion to dismiss trademark infringement claim by the creator of the protocol CBC Casper against CasperLabs, who allegedly continued to use Zamfir's trademark after a partnership disintegrated and Zamfir revoked the trademark license, including by launching an initial coin offering (ICO) using the name Casper without Zamfir's authorization); UMG Recordings, Inc. v. OpenDeal Inc., No. 21 Civ. 9358 (AT), 2022 WL 2441045, at *9 (S.D.N.Y. July 5, 2022) (denying preliminary injunction, finding no likelihood of success on a trademark confusion claim between Republic Records and Republic Music, a marketplace for securitized NFTs in music that enables NFT purchasers to share in music royalties from plays of music associated with their NFT).

190. *Id.*

191. *C.f.* Michaels, *supra* note 6 (arguing that lower courts should reconsider application of First Amendment principles as applied to NFTs in light of the Supreme Court's decision in Jack Daniel's v. VIP Products, 599 U.S. 140 (2023)).

their logo.[192] Although Ripps asserted that the traditional likelihood of confusion test should not apply to creative works like his collection, which were designed to comment on the nature of NFTs, the court determined that his use of identical digital files was not a sufficient artistic expression to qualify for First Amendment protections.[193] Even if Ripps's choice had been sufficiently expressive, the court found Ripps would still violate Yuga Labs' trademarks under the *Rogers v. Grimaldi* test (which asks whether a work that uses a trademark as part of its expression explicitly misleads consumers)[194] because Ripps's use was "explicitly misleading" and added nothing creative to Yuga Labs' content.[195] The court conducted a trial on equitable remedies and recently awarded Yuga Labs $1.4 million of Ripps's profits as equitable relief.[196] The Ninth Circuit could reach a different view of how to measure artistic expression in the context of NFT projects on appeal.[197]

In a case brought by Hermès against a creator of "MetaBirkin" NFTs (colorful images of Hermès Birkin bags covered in fuzzy fur), creator Rothchild asserted that this use of Hermès's marks was also protected artistic expression.[198] The court disagreed, however, and a jury ultimately found Rothchild liable for trademark infringement, determining that consumers would be confused into believing that Hermès sold or endorsed the works and finding that Rothchild expressly mislead consumers with his branding and imagery.[199] Other major companies, like Nike, have also brought suit against those seeking to market NFTs with its marks.[200] Although Nike and other NFT-appropriation cases are ongoing, courts are likely to look to the *Yuga Labs* and *Hermès* cases as persuasive, declining to find protected artistic expression lightly, especially in the face of evidence that the blockchain project creators sought to capitalize on the recognition of well-known brands to sell NFTs.

Blockchain projects can also face cybersquatting liability for using others' trademarks in their domain names; this was another basis for Yuga Labs' claims in the *Yuga Labs v. Ripps* dispute.[201] The

192. Yuga Labs, Inc. v. Ripps, No. CV-22-4355, 2022 WL 18024480, at *3 (C.D. Cal. Dec. 16, 2022).
193. *Id.* at *5; *see also* Findings of Fact and Conclusions of Law, Yuga Labs, Inc. v. Ripps, No. CV-22-4355, at *9 (Oct. 23, 2023) (No. 431) (reaching the same legal conclusions at a later proceeding for equitable remedies as well).
194. Rogers v. Grimaldi, 875 F.2d 994, 996 (2d Cir. 1989).
195. *Yuga Labs*, 2022 WL 18024480, at *5.
196. *Id.*
197. Yuga Labs, Inc. v. Ripps, No. 22-56199, 2023 WL 7123786 (9th Cir. 2023).
198. *See* Hermès Int'l v. Rothschild, No. 22-CV-384, 2023 WL 4145518, at *1 (S.D.N.Y. June 23, 2023) (denying motion for judgment notwithstanding the verdict).
199. *Id.*
200. *See, e.g.*, Complaint, Nike, Inc., v. StockX LLC. (No. 22-CV-983), 2022 WL 340664 (S.D.N.Y. Feb. 3, 2022).
201. *Yuga Labs,* 2022 WL 18024480, at *3.

Anti-Cybersquatting Consumer Protection Act (ACPA) provides civil liability for "bad faith" attempts to appropriate the trademarks of others into domain names that are identical or confusingly similar to another's mark.[202] In addition to registering for domain names on the web, prospectors have begun to collect Ethereum Name Service (ENS) names, which are easy-to-remember-addresses that point to a blockchain wallet.[203] For example, the ENS domain Twitter.eth is not, and never has been, owned by Twitter (now X Corp.), but rather is owned by a prospector who also registered Wells-fargo.eth, Walt-disney.eth, Thehomedepot.eth, and 420 other ENS domains.[204] Courts have not decided if the ACPA will apply to ENS-squatting; this will depend upon whether an ENS domain is a "domain name" under the Act,[205] although an ENS domain has all of the characteristics of a traditional domain name and similar risk of consumer confusion, fraud, and hold-up.[206] Regardless, cybersquatting on ENS domains is likely to constitute trademark infringement if the ENS domain is likely to confuse consumers or if the mark is sufficiently famous that federal trademark anti-dilution rights apply.[207]

C. Copyright Issues in NFTs

1. Minting NFTs Without Adequate Copyright Permissions

Copyright issues can arise when those who mint NFTs do not properly verify that they own the intellectual property rights to the content that they are uploading. The minting of an NFT without authorization of the copyright holder almost assuredly violates the reproduction and derivative rights granted to artists under the Copyright Act, particularly if the minter uploads a copy of another's work as the file to which the NFT points.[208] Last year, for example, the copyright holders for Jay-Z's album, Reasonable Doubt, obtained judgment via

202. 15 U.S.C. § 1125(d)(1)(A).

203. ENS DOMAINS, https://ens.domains/ [https://perma.cc/WKF2-3SFM] (last visited July 30, 2023); *see, e.g.*, *Twitter.eth*, ENS DOMAINS, https://app.ens.domains/twitter.eth [https://perma.cc/89KC-UN7G] (last visited July 30, 2023).

204. 0xbb4 . . . df339, ENS DOMAINS, https://app.ens.domains/0xbb46bE602D82F3209B6392130B5BBd40D78df339 [https://perma.cc/LG8H-ER23] (last visited July 30, 2023).

205. *See* 15 U.S.C. § 1127 (defining "domain name" as "any alphanumeric designation which is registered with or assigned by any domain name registrar, domain name registry, or other domain name registration authority as part of an electronic address on the Internet").

206. Imagine, for example, if the owner of the Wells-fargo.eth account asked Wells Fargo customers to deposit their cryptocurrency into their accounts by sending it there; this would result in cryptocurrency transfer to the prospector who owns the Wells-fargo.eth wallet address, not to any Wells Fargo account.

207. 15 U.S.C. § 1125(c).

208. *See generally* 17 U.S.C. § 106; Notorious B.I.G. LLC v. Yes Snowboards, CV-19-01946, 2022 U.S. Dist. LEXIS 99870, at *5 n.3 (C.D. Cal. June 3, 2022) (noting

settlement against Damon Dash for minting an NFT of the album without permission.[209]

Small, independent artists may face enforcement hurdles to stopping unauthorized NFTs of their artwork, such as difficulty determining the identity of the infringers or obtaining jurisdiction over them.[210] Nonetheless, while court cases might be difficult to pursue, artists can ask NFT hosting platforms to remove copyrighted content using takedown procedures under the Digital Millennium Copyright Act (DMCA).[211] DMCA takedowns can still be effective because many popular platforms for exchanging Web 3.0 content, such as OpeaSea, are centralized and nearly 70% of NFTs point to image files stored on centralized servers.[212] The DMCA provides incentives for online service providers and platforms to quickly remove public access to content when it receives notice that the content infringes a copyright.[213] Specifically, once an internet provider receives written notice of a copyright infringement, the provider avoids liability for that infringement by removing the content.[214] The statute provide a series of counternotice and response options thereafter.[215] One core benefit of the DMCA's notice and takedown procedures for copyright holders is the ability to protect copyrighted works against infringements on the Internet that once evaded prosecution due to issues such as anonymous posting, foreign posters, or repeated or widespread infringement that was too costly and difficult to resolve through federal lawsuits.[216] Although artists can rely on takedowns, they might not discover illicit NFT creators or might be unable to stop an illicit NFT creator before customers have already paid for the NFT. In that case, artists can only obtain damages

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in dicta that the court assumes NFTs could violate an artist's reproduction and derivative rights).

209. Roc-A-Fella Records, Inc. v. Dash, No. 21-cv-05411, 2022 U.S. Dist. LEXIS 114591 (S.D.N.Y. June 27, 2022).

210. *See, e.g.*, Lois Beckett, *'Huge Mess of Theft and Fraud: Artists Sound Alarm as NFT Crime Proliferates*, THE GUARDIAN (Jan. 29, 2022), https://www.theguardian.com/global/2022/jan/29/huge-mess-of-theft-artists-sound-alarm-theft-nfts-proliferates [https://perma.cc/S75Q-LXSF]; @David_Burt_Art, Twitter (Nov. 9, 2021, 8:51 AM), https://twitter.com/David_Burt_Art/status/1458084775772758018 [https://perma.cc/A4A4-8PPW].

211. 17 U.S.C. § 512.

212. John Cook, *70% of all digital Art is Centralized, Including the World's Most Expensive NFT*, FRONTRUN (Dec. 12, 2022), https://www.frontruncrypto.com/p/70-of-all-digital-art-is-centralized [https://perma.cc/QK57-KBUZ] (Indeed, a number of NFT images broke following the FTX restructuring because they were hosted on FTX urls which were replaced with redirects to FTX restructuring information).

213. 17 U.S.C. § 512.

214. *Id.*

215. *Id.*

216. *See generally* Jennifer Urban et al., *Notice and Takedown: Online Service Provider and Rightsholder Accounts of Everyday Practice* (November 1, 2017), 64 J. COPYRIGHT SOC'Y 371 (discussing the benefits and dangers of the DMCA takedown process for a digital society).

from court, private settlements, or, in some cases, the small claims procedures available at the U.S. Copyright Office.[217]

2. Copyright & Algorithmically Generated and AI-Generated Artwork and NFTs

Those who create NFT projects using generative technologies, including both algorithmic generation and using generative artificial intelligence (AI), might have concerns over whether they can protect their artwork under U.S. copyright law. Others might wonder whether they can freely mint artwork generated by others using AI as NFTs without a copyright license. In February 2023, the U.S. Copyright Office took a stance against generative-AI works, cancelling a copyright claim by author Kris Kashtanova for comic book images made with the aid of Midjourney, an AI-enabled art generation tool.[218] Midjourney, and similar tools like DALL-E and other stable diffusion models, allow users to generate digital artwork from a set of word-based or image-based prompts.[219] Although human direction is required, the outputs can be unpredictable.[220] In Kashtanova's case, the Copyright Office found their work lacked sufficient human direction and control to be copyright-eligible as an "original work[] of authorship."[221] The Copyright Office also issued guidance generally declining to extend protection to art created with generative AI,[222] although it is seeking commentary from the public on questions of AI creations and copyright law.[223] The Copyright Office also recently denied copyright registration to Jason Allen's "Théâtre D'opéra Spatial," an award-winning and detailed work which required over 600 revised prompts, expert engineering,

217. COPYRIGHT CLAIMS BOARD, https://www.ccb.gov/ [https://perma.cc/5UBT-FRLZ].
218. Letter from Von Lindberg, Taylor English Duma LLP, U.S. Copyright Off., on Zarya of the Dawn (Registration # VAu001480196) to Van Lindberg, Taylor English Duma LLP, United States Copyright Office (Feb. 21, 2023).
219. *See* DALL-E-2, https://openai.com/dall-e-2/ [https://perma.cc/5RUG-N4BD] (last visited Mar. 16, 2024); Nitesh Kumar, *Midjourney vs DALL-E vs. Stable Diffusion: Best AI Art Player,* ANALYTICINSIGHT (June 24, 2023), https://www.analyticsinsight.net/midjourney-vs-dall-e-vs-stable-diffusion-best-ai-art-player/ [https://perma.cc/RD2Y-ZV33].
220. *But see* Adi Robertson, *Professional AI whisperers have launched a marketplace for DALL-E prompts*, THE VERGE (Sept. 2, 2022), https://www.theverge.com/2022/9/2/23326868/dalle-midjourney-ai-promptbase-prompt-market-sales-artist-interview [https://perma.cc/CS7Y-2JHH] (showing that some experienced users are able to masterfully manipulate prompts to reliably and consistently generate visual features in the outputs).
221. Letter from Von Lindberg, *supra* note 218 (citing 17 U.S.C. § 102(a)).
222. Copyright Registration Guidance: Works Containing Materials Generated by Artificial Intelligence, 88 Fed. Reg. 16, 190 (Mar. 16, 2023) (to be codified at 37 C.F.R. pt. 202).
223. Artificial Intelligence and Copyright, 88 Fed. Reg. 59, 942 (Aug. 30, 2023).

and inpainting.[224] Kashtanova chose not to appeal the decision but will seek to register other works that begin with a human sketch that is then modified by AI.[225]

Courts faced a similar question of how new tools of creation impact copyright over a hundred years ago upon the creation of the camera. In the case *Burrow-Giles Lithographic Co. v. Sarony*, the Supreme Court found that photographers do not lose copyright eligibility by using cameras to assist in human creative expression, even though some of the expression is fixed by machine rather than a human hand.[226] The Court stated that works are protectable when they are the product of a person's "intellectual invention," a work created from "fancy, or imagination."[227] Courts today should apply this caselaw to reach a similar result for AI-generated works of art.[228] Cameras capture a scene not only perfectly imagined by the photographer, but also expressions of the model and changes in light and form dictated by nature and randomness. Similarly, generative AI creation is shaped both by human creativity, choice of setting, and prompt engineering but also by training inputs and randomness built into generative systems intentionally.[229]

Nevertheless, the modern Copyright Office distinguished the *Sarony* photography case from AI works, urging that AI tools like Midjourney perform the creative work without equivalent direction and control to a photographer taking a photo.[230] The Copyright Office could extend this ruling further, taking a similar stance that algorithmically-generated images, like those within large profile picture (PFP) collections, are similarly lacking in human creative authorship if their contents are determined largely from an algorithmic distribution of traits instead of each chosen by a human author.[231] The Copyright Office will almost certainly find that NFT images created with stable diffusion or other

224. Letter from Suzanne V. Wilson, U.S. Off. Copyright Review Board, General Counsel on Second Request for Reconsideration for Refusal to Register Théâtre D'opéra Spatial (SR # 1-11743923581) to Tamara Peter Eq. (Sept 5, 2023).

225. Tom Hals & Blake Brittain, *Insight: Humans vs. machines: the fight to copyright AI art*, REUTERS (Apr. 1, 2023), https://www.reuters.com/default/humans-vs-machines-fight-copyright-ai-art-2023-04-01/ [https://perma.cc/6YTL-84CH] (Kashtanova will continue to seek protection in her work "Rose Enigma"); author discussion with Kashtanova via Twitter direct messaging in August 2023.

226. Burrow-Giles Lithographic Co. v. Sarony, 111 U.S. 53, 61 (1884).

227. *Id.*

228. Christa Laser, *How A Century-Old Insight of Photography Can Inform Legal Questions of AI-Generated Artwork*, Technology & Marketing Law Blog (Aug. 2, 2023), https://blog.ericgoldman.org/archives/2023/08/how-a-century-old-insight-of-photography-can-inform-legal-questions-of-ai-generated-artwork-guest-blog-post.htm [https://perma.cc/Q8MQ-KQSD]; *see also* Richard H. Chused, *Randomness, Ai Art, and Copyright*, 40 CARDOZO ARTS & ENT. L.J. 621 (2023).

229. *See* Chused, *supra* note 228.

230. Letter from Von Lindberg, *supra* note 218.

231. *See* Copyright Registration Guidance: Works Containing Materials Generated by Artificial Intelligence, 88 Fed. Reg. 16, 190 (Mar. 16, 2023) (to be codified at 37

similar AI-art-creation tools and AI-generated software projects such as those using GitHub Copilot to generate code are unprotectable because they, too, employ AI in their means of expression.[232]

The Copyright Office effectively adopted a "means of creation" test, an unprecedented test measuring the means of creation that might be administratively unworkable and have far-reaching consequences both substantively and procedurally.[233] Specifically, in the Copyright Office's current policies, the Office states that works created by entering a prompt into a generative-AI tool and receiving an output are not protectable because they lack human authorship.[234] Any test that relies upon an assessment of the means of creation, particularly how specific steps in the creative process occurred, is difficult to administer and might require the Copyright Office to conduct a scope of examination that includes topics of credibility assessment and requires more time than the Copyright Office is equipped to offer to each application.

The Copyright Office's policies of denying protection to AI-generated works could be effectively overturned if an individual who is denied registration files an infringement action in federal court, leaving the federal court to decide eligibility instead of the Copyright Office.[235] Courts are likely to decide copyright eligibility differently than the Copyright Office. When courts have faced questions regarding the use of new technology for creation, they have generally allowed the human who used the tool towards the human's creative ends to obtain copyright protection.[236] Although one U.S. court affirmed a denial of copyright registration to an AI-generated work, this opinion has a very unique factual background where a registrant claimed, as a test case, that no human creativity was involved in the formation of the work at any stage and it "lacks traditional human authorship." [237] The procedural basis for review was not whether the work should have been granted copyright but instead whether the Copyright Office's decision to deny was "arbitrary and capricious."[238]

C.F.R. pt. 202) (suggesting that the Copyright Office will not register AI-generated works).

232. *Id.*

233. *See* Christa Laser, *Comments re Notice of Inquiry on Artificial Intelligence and Copyright* (Oct. 31, 2023), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4618406 [https://perma.cc/DC9H-P5T4].

234. Copyright Registration Guidance: Works Containing Materials Generated by Artificial Intelligence, 88 Fed. Reg. 16, 192 (Mar. 16, 2023) (to be codified at 37 C.F.R. pt. 202).

235. 17 U.S.C. § 411(a) (giving a path to bring an infringement claim notwithstanding denial of eligibility by the Copyright Office). The Copyright Office decision can also be overturned by filing a complaint that the Copyright Office's decision was arbitrary and capricious under the Administrative Procedure Act. *See* 5 U.S.C. § 706.

236. *See Burrow-Giles*, 111 U.S. at 61.

237. Thlaer v. Perlmutter, No. 22-cv-1564, slip op. at *5–9 (D.D.C. Aug. 18, 2023).

238. *Id.*

Notably, Yuga Labs did not assert a copyright claim in any of the digital image files used for Bored Ape Yacht Club NFTs in the *Yuga Labs, Inc. v. Ryder Ripps* case.[239] It is possible that Yuga Labs declined to assert copyright claims in its NFTs to avoid legal questions around generative art copyrights and to reduce the risk that a court would issue a decision stating that its apes artwork was not copyrightable. Nonetheless, the Yuga Labs case makes clear that trademark law can form an alternative path to stopping those who copy and re-mint another's NFT project, even if the artwork is automatically generated, if the copycat project misleads consumers as to who produced it.[240] Courts might treat algorithmically-generated PFP image collections, like Yuga Labs', more leniently than those created with generative stable diffusion models because the artist is at least illustrating the base creature and each trait to be distributed. Yuga Labs, however, apparently did not want to take the risk of raising a copyright claim. Some scholars urge that the question of whether copyright exists in the work is not what drives the market for NFTs, and rather it is in fact branding and clout that matters,[241] suggesting trademark as an alternative path.

Even if courts ultimately find that AI-generated works are entitled to some copyright protection, questions remain over how strong the copyright claims will be and how expansively defenses such as fair use will apply to them. For works on the boundary of protectable and unprotectable, some courts have applied only a "thin" copyright to the work, protecting only nearly identical works.[242] In the software context in particular, even if the works are identical or nearly identical, a defense of transformative fair use might be available if the new use of the software is for a different technology platform or purpose, as seen

239. *See* Yuga Labs, Inc. v. Ripps, No. CV 22-4355, 2023 WL 3316748, at *15 (C.D. Cal. Apr. 21, 2023) (finding Yuga did not violate the DMCA by filing takedown requests without valid copyright claims because the requests were generic takedowns based on trademark violations, not DMCA takedown requests. Rather, Yuga Labs only claimed copyright over its skull logo).

240. *Id.*

241. *See* Frye, *supra* note 5; EDWARD LEE, CREATORS TAKE CONTROL: HOW NFTS REVOLUTIONIZE ART, BUSINESS, AND ENTERTAINMENT (Harper Business 2023) (arguing that tokenization can change the social dynamics of intellectual property).

242. Satava v. Lowry, 323 F.3d 805, 812 (9th Cir. 2003) (referring to a "thin copyright, which protects against only virtually identical copying"); Ets-Hokin v. Skyy Spirits, Inc., 323 F.3d 763, 766 (9th Cir. 2003) ("[T]heir similarity is inevitable, given the shared concept, or idea . . . When we apply the limiting doctrines, subtracting the unoriginal elements, Ets–Hokin is left with only a 'thin' copyright, which protects against only virtually identical copying."); *see also* Nat'l Nonwovens, Inc. v. Consumer Prods. Enters.*, Inc.*, 397 F. Supp. 2d 245, 257 (D. Mass 2005) (requiring nearly identical work to find substantial similarity if only a small part of the work is protectible); 2 NIMMER ON COPYRIGHT § 8.01 (Matthew Bender & Co. Inc., 2023) (discussing thin copyright protections where the work mostly consists of tropes or uncreative elements).

in the *Google v. Oracle* case.[243] If courts find AI-generated works are entitled to at least thin copyright protection, then transformative fair use principles would not save an accused infringer who uses identical code or art in an identical context, such as someone who copies code for a new technology entirely to make one identical in all but name for the same purpose.[244]

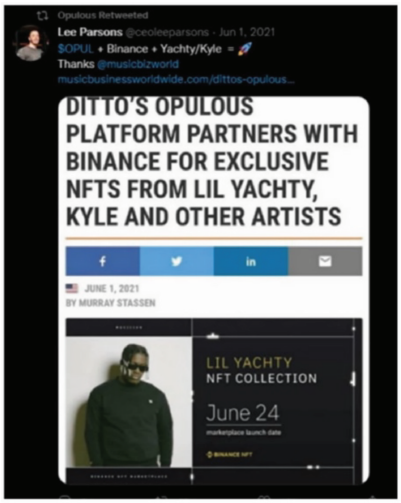
In addition to questions of copyright eligibility and the ability to pursue infringement claims, blockchain creators using AI tools should be mindful of the risk that their creations could infringe the rights of others. Those who create software using AI-generation tools for example should be careful to ensure that the generated code that they used is not substantially similar to someone else's publicly available code that could have been used for training, which could constitute copyright infringement.[245] Similarly, if AI-image generation tools produce an output that is substantially similar to an image used for training, users publishing that output could be infringing.[246] Some platforms have put "guardrails" that prevent outputs from appearing the same as certain famous copyrighted works, such as "Afghan Girl."[247] A number of generative AI platforms are offering indemnity to users of their platforms who are sued for copyright infringement.[248] Copyright law would not prevent anyone from minting NFTs of images and files that are public domain assets, like U.S. government works and works that are sufficiently old to no longer be protectable,[249] but laws like trademark law and right of publicity could prevent the use if the collection uses the valid mark of another or the name or likeness of another in an infringing manner.[250] Many blockchain projects also use open-source code. Unique issues of copyright law and contract law can apply if

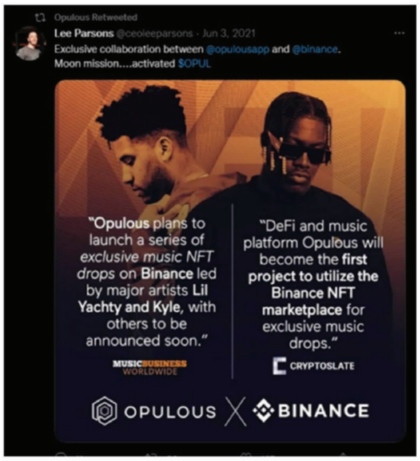
243. Google LLC v. Oracle Am., Inc., 141 S. Ct. 1183, 1203 (2021).
244. *Satava*, 323 F.3d at 812.
245. *See* 18 Am. Jur. 2d Copyright and Literary Property § 259 (2023) (discussing substantial similarity test of copyright infringement).
246. *Id.*
247. *Cf.* Karla Ortiz (@Kortizart), X, (Nov. 5, 2022, 10:25 AM), https://twitter.com/kortizart/status/1588915427018559490?lang=en [https://perma.cc/B9HE-6HE2] (showing Afghan Girl prompts resulting in works similar to Afghan Girl work). Today, entering "Afghan Girl" into Midjourney as a prompt does not result in works that replicate the appearance of the original, likely due to guardrails.
248. Kyle Wiggers, *Microsoft extends generative AI copyright protections to more customers*, TECHCRUNCH (Nov. 15, 2023), https://techcrunch.com/2023/11/15/ microsoft-extends-generative-ai-copyright-protections-to-more-customers/ [https://perma.cc/7KBQ-MGFS].
249. *See* 17 U.S.C. §§ 105, 302–05 (Determining copyright duration can be difficult and issues such as re-recorded music or modern photographs of old sculptures can create independent works with new copyright durations); *see* Gaylord v. United States, 595 F. 3d 1364 (Fed. Cir. 2010) (finding sculptural and photographic works had separate copyrights).
250. See *infra* section IV.E (discussing right of publicity); *supra* section IV.C (discussing trademark rights).

someone copies open source code without abiding by the requirements of that open source agreement, as it is the open source contract that provides a copyright license to the software but only if the licensee abides by all of its terms.

D. Right of Publicity Issues in NFTs

Blockchain projects must also be mindful not to trade on the name, image, or likeness of a person who does not sponsor or endorse their product. Right of publicity, which is a right that protects the name, image and likeness of a person, is a state law claim that differs in material ways from state to state.[251] In some states, the estates of deceased people can sue for violations of their rights of publicity, such as laws in Tennessee protecting Elvis Presley's legacy, whereas other states only protect living individuals.[252] In 2021, Lil Yachty sued an NFT project for using his name and likeness to raise over $6.5 million in funds.[253] Without authorization of Lil Yachty, the defendant Lee Parsons and his company Opulous marketed NFTs by suggesting an official collaboration with the artist:[254]





False suggestions of associations with well-known artists can cause the artists' fans to spend money in the belief that they are supporting

251. *Use of a natural person's identity; the right of publicity*, 6 CALLMANN ON UNFAIR COMP., TR. & MONO. § 22:34 (4th ed.) (noting differences).
252. *Id.*
253. McCollum v. Opulous, No. 22-cv-00587, 2021 WL 6707492 (C.D. Cal. Jan. 26, 2021).
254. McCollum v. Opulous, No. 22-cv-00587, 2022 WL 17218072, at *7 (C.D. Cal. Aug. 3, 2022).

their favorite creators when in fact the project is usurping the marketing value of the creator's image and fans' connection with an artist.[255] Celebrities may also have trademark claims in their names, in addition to right of publicity claims.[256] (The parties settled for an undisclosed amount after a U.S. federal court determined that U.S. jurisdiction extended to the asserted unlawful activity.).[257]

Sometimes, however, courts have found that claims for use of a person's image can conflict with freedom of expression and copyright law. For example, the estate of Notorious B.I.G. sued a former photographer who made NFTs, posters, and prints, among other products, depicting Notorious B.I.G. and using photographs created by the defendant originally with permission.[258] Although the court found that the photographer could not make skateboards and "other merchandise" that "exploit[s] his likeness on an unrelated product," the court found NFTs to be more akin to photographic prints and determined that the photographer's rights to reproduce his artistic works under copyright law would preempt any publicity claims from sales of NFTs or prints of the photographer's work.[259] Courts, therefore, sometimes limit right of publicity claims against photographers and artists who depict famous people in their NFTs without otherwise suggesting endorsement, affiliation, or partnership.[260]

What should the law be in this area? It might be more legally sound to characterize these as First Amendment limitations on rights of publicity, as other courts have done in the context of paintings, than as tension between copyright law and right of publicity;[261] nothing in the copyright act should preempt state law protections of individuals' names and likenesses because the copyright laws are rights to exclude others from producing, not rights to reproduce.[262] Moreover, characterizing these limits as First Amendment limitations better protect models and celebrities against uses that do commercially misappropriate or suggest false affiliations, like that faced by Lil Yachty. NFTs are fundamentally a different marketplace and a use case more analogous to skateboards than photographic prints and paintings in that they are used to signal affinity to the person depicted more than as a tribute to

255. *See id.*
256. *See id.* (also bringing trademark infringement claims).
257. *Id.* (denying motion to dismiss, finding jurisdiction extends to social media posts targeted to U.S. consumers); Order Granting Joint Stipulation of Dismissal, McCollum v. Opulous (No. 22-CV-00587), 2022 WL 17218072 (C.D. Cal. June 2, 2023).
258. Notorious B.I.G. LLC v. Yes Snowboards, CV-19-01946, 2022 U.S. Dist. LEXIS 99870, at *2 (C.D. Cal. June 3, 2022).
259. *Id.* at *5.
260. *Id.*
261. *See* ETW Corp. v. Jireh Pub., Inc., 332 F.3d 915 (6th Cir. 2003) (finding First Amendment protection for a painting of Tiger Woods).
262. 17 U.S.C. § 106.

the photographer's skills and artistry. Both right of publicity of a person depicted and copyright of the artist can coexist. Whoever plans to sell the NFT would simply need to obtain rights from both the model and the artist.

As use of deepfakes and AI-generated marketing begins to proliferate, there is a high risk that unscrupulous actors will use celebrity likenesses to con fans into purchasing new blockchain tokens or NFTs apparently endorsed by these celebrities.[263] Bad actors might also mint NFTs of celebrities without their consent, such as minting NFTs of music that sounds like a celebrity's voice singing new music. Most of this conduct would be unlawful under existing state right of publicity law, but state-by-state enforcement can be difficult and inconsistent.[264] One option to address this concern would be to give a federal right of action against right of privacy harms and name, image, and likeness violations to provide better protections against harms resulting from new uses of generative technology.[265]

E. Promotions & Advertising Law Problems: Fraud and Illegal Lotteries

False advertising liability can arise when projects make promises that they cannot keep, such as promising that a collection will reach a certain price, promising to donate proceeds to charity, or promising that the project team has skills or expertise that they do not have. The federal Lanham Act provides civil liability against those who make any "false or misleading representation of fact" in a commercial promotion.[266] Moreover, state advertising and unfair competition law can likewise provide remedies for false or misleading statements in advertising any product.[267] Additionally, companies can face liability at the Federal Trade Commission for misleading advertising.[268] An advertising claim that is literally true but nonetheless misleading would violate false advertising laws.[269]

263. *See, e.g.*, McCollum v. Opulous, No. 22-cv-00587, 2022 WL 17218072, at *7 (C.D. Cal. Aug. 3, 2022).
264. *See* Jennifer Rothmann, *Right of Publicity State-by-State*, RIGHT OF PUBLICITY ROADMAP, https://rightofpublicityroadmap.com [https://perma.cc/9UR3-6UZM] (providing a multistate survey of state right of publicity laws).
265. *See* Christa Laser & Eric Goldman, *Deepfakes, Privacy, and Freedom of Speech*, YOURWITNESS BLOG (June 18, 2021), https://yourwitness.csulaw.org/uncategorized/deepfakes-privacy-and-freedom-of-speech/ [https://perma.cc/64VQ-46GZ].
266. 15 U.S.C. § 1125(a).
267. *E.g.*, CAL. BUS. AND PRO. CODE § 17200 (1993) (prohibiting deceptive business practices); CAL. BUS. & PRO. CODE § 17500 (1999) (prohibiting false advertising).
268. *See Advertising and Marketing on the Internet: Rules of the Road*, FTC, https://www.ftc.gov/business-guidance/resources/advertising-marketing-internet-rules-road [https://perma.cc/VHT3-9GU2] (last visited Sept. 4, 2023).
269. *See id.*

A number of cases have raised advertising law issues in the blockchain context, but the law applies in the same ways that it did before blockchain. For example, in an ongoing case, Nike asserted that StockX, an unauthorized seller of NFTs of Nike shoes, falsely advertised its sneakers as "100% Verified Authentic."[270] In another case, the plaintiff asserted that statements claiming a blockchain project was "hack-free since 2013," was "using . . . features to make atomic swaps simpler," and was "registered with the SEC" were false advertising claims; the court found the first two statements substantially true since the last hack was in 2013 and the project was working on technology for atomic swaps, but found the third statement false, denying a motion to dismiss false advertising claims where the business only filed a Form D but was not a registered security.[271] Blockchain companies should be mindful that any material listed on their website or stated in any social media post or other advertisement must be true.

Blockchain projects also should be mindful not to conduct illegal lotteries. Offering a reward based on chance that requires consideration to participate can constitute a lottery, a game which in many states cannot be operated by a for-profit private company. [272] Furthermore, the operation of an illegal lottery caries criminal penalties in most states. NFT projects will sometimes post on social media asking members of the public to purchase NFTs from the project at a certain time to win a prize, like a free airdrop. These endeavors carry a substantial risk of being deemed illegal lotteries in certain jurisdictions because they require consideration (the purchase of a coin or NFT) to get access to a random chance to win another item (the airdrop). Blockchain projects offering free prizes may modify their promotions by removing either the chance element (instead, making victory skill-dependent) or avoiding the consideration element by offering alternative entry methods without a requirement of purchase. However, these types of games of skill and sweepstakes schemes are also regulated by some states, meaning blockchain projects holding these competitions may still encounter legal pitfalls. Blockchain projects operating an illegal lottery may face not only state liability but also potential federal criminal liability, as well.[273]

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270. Nike, Inc. v. StockX, LLC, No. 22-CV-00983, 2023 WL 144718, at *1 (S.D.N.Y. Jan. 9, 2023).
271. Blockchain Lux. S.A. v. Paymium, SAS, No. 18 Civ. 8612, 2019 WL 4199902, at *10 (S.D.N.Y. Aug. 7, 2019).
272. *E.g.*, United States v. Davis, 690 F.3d 330, 333 (5th Cir. 2012) (finding slot machine games at internet café violated Texas and federal lottery laws).
273. 18 U.S.C.A. § 1955 (providing for fines and prison time up to five years for the operation of a lottery by a business of five or more people in operation more than 30 days or having revenue over $2,000 on any day).

V. CONTRACTUAL ISSUES

A. Code Is Not Law

"Smart contracts," or what this Author prefers to call chaincode, are not legal contracts but computer programs.[274] In order for any agreement to be a legally valid contract, it must be executed between two or more people with legal capacity to contract, there must be an offer and manifestation of acceptance, the material terms of the agreement must be sufficiently definite to a reasonable person to "produce a reasonably ascertainable objective meaning" of the terms, there must be consideration from both parties (meaning each party provides something of value), and the subject matter of the agreement must not be unlawful under statute or public policy.[275] This means that for a smart contract to be legally valid, the material effects of the code should be clear to a reasonable person who does not understand code, such as by including accompanying legal text and human-readable information that say the major events that will happen when the user executes the smart contract.[276] The contract should not be for unlawful objects or purposes such as agreements that unlawfully restrain trade or freedom of employment, that waive protections guaranteed to the vulnerable such as fiduciary liability, or that restrict protected rights such as family relations.[277] Moreover, a smart contract entered into by a minor or a person operating under duress might be void or voidable, as discussed further below.[278] Code is not automatically legally enforceable, meaning the courts and government will not stand behind the executed smart contract unless it is also legally valid.

In simple cases, chaincode might reflect the expectations of the parties and be sufficiently clear from context to a reasonable person, such as agreements for the purchase of an item in exchange for cryptocurrency. The effect of more complex code (such as NFTs with access to perks only based upon conditions being met) should be set forth in a human-readable form that would make it understandable to a reasonable signatory to be legally enforceable. However, sometimes only the creator of the smart contract (and sometimes not even the creator if they copied the code from elsewhere) understand the full effect of

274. *See Introduction to Smart Contracts*, ETHEREUM.ORG, https://ethereum.org/en/smart-contracts/ [https://perma.cc/A7UM-CHTQ] (last visited Feb. 20, 2023); see *supra* Section II.A. (for more technical background on smart contracts).

275. WILLISTON ON CONTRACTS § 3:2, n.1 (4th ed. 2022) (citing Visiting Nurse Ass'n, St. Louis v. VNAHealthcare, Inc., 347 F.3d 1052, 1054 (8th Cir. 2003)).

276. *See generally id.*

277. *See* RESTATEMENT (SECOND) OF CONTRACTS § 191 (1981) (custody of minor children is not enforceable if not in the best interest of the child).

278. RESTATEMENT (SECOND) OF CONTRACTS § 176 (1981).

the code in a smart contract.[279] Courts require parties to communicate their legal intents using expressive language or acts consistent with a pre-code era.[280] Sometimes, smart contract transactions have no official legal documentation associated with the transfer beyond the platform terms of service, and in that case it is generally the platform's terms of service, not the code of the executed smart contract, that will constitute the legal contract for the transaction.[281] If chaincode contains a loophole or bug not apparent to a reasonable signatory, exploitation of that bug will not be an enforceable right or defense in a court of law.

Notably, mere compliance with chaincode will not serve as protection against contract defenses such as duress or regulatory or criminal charges. For example, it is not a defense to legal liability for financial fraud that a user merely exploited a vulnerability that was written into a smart contract or protocol. Indeed, regulators have pursued claims of market manipulation against those who abuse vulnerabilities in cryptocurrency chaincode to alter prices or extract value in a way that deceives ordinary market participants.[282] For example, in 2022, Avraham Eisenberg executed a purported scheme to inflate the price of a low-volume cryptocurrency on the trading platform Mango Markets and use the inflated price as collateral to withdraw $116 million in bitcoin, ether, and other coins as a loan that he did not intend to return, an action permitted by the chaincode that governed Mango Markets, leaving the marketplace devastated.[283] Days later, Mango DAO was contacted about and voted to approve a settlement that would help return the marketplace to solvency; wallets controlled by Eisenberg transferred a portion of the funds back under this purported settlement agreement, returning $67 million of the withdrawn assets and leaving Eisenberg with $49 million to keep.[284] On Twitter (now X) immediately afterwards on October 15th, Eisenberg announced, "I believe all of our

279. *See, e.g.*, Andrew Hayward, *Aku Ethereum NFT Launch Ends With $34M Locked in Flawed Smart Contract*, DECRYPT (Apr. 24, 2022), https://decrypt.co/98530/aku-ethereum-nft-launch-ends-with-34m-locked-in-flawed-smart-contract [https://perma.cc/C4EH-6CXF].

280. RESTATEMENT (FIRST) OF CONTRACTS § 90 (1932) (explaining that even if a contract is not valid, courts may sometimes enforce the expectations of the parties under equitable principles if it would be unfair to not enforce a promise or exchange that the party reasonably relied upon: "[a] promise which the promisor should reasonably expect to induce action or forbearance of a definite and substantial character on the part of the promisee and which does induce such action or forbearance is binding if injustice can be avoided only by enforcement of the promise.")

281. *See e.g.*, *Terms & Conditions*, BAYC, https://boredapeyachtclub.com/#/terms [https://perma.cc/43FQ-TRM2] (last visited July 29, 2023).

282. *E.g.*, Complaint at 1, SEC v. Eisenberg, No. 23-CV-00503 (S.D.N.Y. Jan. 20, 2023) [https://perma.cc/9AHN-7MNZ] (alleging that Eisenberg manipulated the price of cryptocurrency swaps on the Mango Markets trading platform to obtain $116 million dollars).

283. *Id.* at 13–17.

284. *Id.* at 16–17.

actions were legal open market actions, using the protocol as designed . . . . It is not illegal to be smarter than your counterparties . . . ."[285] U.S. regulators then incarcerated and charged Eisenberg with commodities fraud and manipulation, wire fraud, manipulation of swap contracts, securities market manipulation, and more, which are pending at the time of this writing.[286] The relevant statutes and regulations against market manipulation provide no defense on the ground that the computer systems that enabled the transactions were vulnerable, but focus instead on whether the conduct engaged in was manipulative or deceptive to ordinary market participants.[287] Such a broad law has the power to encompass people who misuse new technology towards familiar ends.

Mango Labs also brought suit alleging that because Eisenberg's conduct rendered the marketplace insolvent in the absence of the settlement funds, the settlement vote by the Mango DAO was not a legally valid acceptance of contract and Mango DAO would not be bound by the obligation to not bring claims to recover the remaining funds.[288] In order for contractual agreements to be binding, they must be entered into by legally competent persons who are not acting under duress or threat.[289]

Courts apply traditional principles of contract law to determine if the circumstances render the contract void or voidable for duress or lack of capacity.[290] A voidable contract is one that the victim may choose to invalidate, whereas a void contract is never legally formed.[291] Use of physical violence or credible threats of imminent physical violence to coerce a party into a transaction will render a contract void, whereas placing the victim into economic circumstances that leave the victim with "no reasonable alternative" but to execute the contract will render the contract voidable at will by the victim.[292] The main practical difference is that if a third-party, good faith purchaser acquires title from someone who obtained the title from a voidable contract, such as if a third party unknowingly purchases an NFT from someone

285. @avi_eisen, X (Oct. 15, 2022, 11:48 AM), https://twitter.com/avi_eisen/status/1581326197241180160 [https://perma.cc/6FY8-YGE2].
286. *See* SEC v. Eisenberg, No. 23-CV-503 (S.D.N.Y. Jan. 20, 2023); Complaint at 17–20, CFTC v. Eisenberg (No. 23-CV-173) (S.D.N.Y. Jan 9, 2023); United States v. Eisenberg, 23-CR-10 (S.D.N.Y. Jan 9, 2023).
287. *See generally* 15 U.S.C. § 78j(b) (making the use of "any manipulative or deceptive device" in connection with a security transaction unlawful); 17 C.F.R. § 240.10b-5 (1951) (codifying the same).
288. Complaint at *2–3, Mango Labs LLC v. Eisenberg, (No. 23-CV-665), 2023 WL 3510908 (S.D.N.Y. Jan. 25, 2023).
289. RESTATEMENT (SECOND) OF CONTRACTS § 176 (AM. L. INST. 1981).
290. *See* RESTATEMENT (SECOND) OF CONTRACTS § 174, Cmt. b (AM. L. INST. 1981).
291. *Id.*
292. 28 RICHARD A. LORD, *Effect of Duress; Agreement as Void or Voidable*, 28 WILLISTON ON CONTRACTS § 71:8 (4th ed. 2022).

who obtained it by economic coercion but without threat of physical force, the good faith purchaser can take legal title, but if the good faith purchaser tries to acquire the property from someone whose obtained it by force, they may not take legal title.[293] For example, criminals have engaged in "wrench attacks" to force prominent holders of cryptocurrency or blockchain assets to transfer their assets; these transactions are considered legally void (both because they would be entered into under duress and presumably lacked valid consideration or exchange of value from both parties) and a court could order return from anyone who later possesses or has control over the assets (such as a centralized exchange).[294]

Signatures on blockchain transactions are executed differently than signatures in most other transactions, but they can still be legally valid. Typically, a blockchain transaction is "signed" by a user logging into a wallet application that connects to an exchange that keeps the cryptographic keys necessary to complete the transaction, reviewing the transaction, and then clicking "sign."[295] The parties' legal names are often not used, but each transaction is associated with a wallet ID.[296] Under the Electronic Signatures in Global and National Commerce Act, electronic signatures are no less valid than physical signatures and are subject to the same requirements.[297] A signature is valid when it is any mark made by a person who intends to execute it, whether it is a name, an X, or any other mark of acceptance.[298] Using a secure login credential that is uniquely accessible to execute a transaction can be the basis for an electronic signature.[299] Therefore, unless someone gained unauthorized access, a wallet signature is likely a legally sufficient signature under current law. Some states like Ohio have passed laws making clear that blockchain wallet signatures constitute legal signatures.[300]

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293. *See* RESTATEMENT (SECOND) OF CONTRACTS § 174, Cmt. b (AM. L. INST. 1981).
294. *See* Sun, *supra* note 64.
295. *See generally Sign Data*, METAMASK, https://docs.metamask.io/wallet/how-to/sign-data/ [https://perma.cc/V895-AEQW] (last visited Oct. 11, 2023).
296. *Id.* (showing wallet addresses or sometimes chosen names).
297. 15 U.S.C. § 7001.
298. *See* 80 C.J.S. *Signatures* § 16 (2023).
299. Bannister v. Marinidence Opco, LLC., 64 Cal. App. 5th 541, 545, 279 Cal. Rptr. 3d 112, 115 (2021), as modified (May 21, 2021) ("[A] party may establish that the electronic signature was 'the act of the person' by presenting evidence that a unique login and password known only to that person was required to affix the electronic signature, along with evidence detailing the procedures the person had to follow to electronically sign the document and the accompanying security precautions.").
300. Ohio's Uniform Electronic Transactions Act, OHIO REV. CODE ANN. § 1306.01(G)–(H) (West 2020) ("[A] record or contract that is secured through blockchain technology is considered to be in an electronic form and to be an electronic signature" and a "signature that is secured through blockchain technology is considered to be in an electronic form and to be an electronic signature.").

Some scholars urge that regulators and lawmakers should find ways to recognize chain code as law.[301] However, even if this were to occur, principles such as courts not enforcing contracts entered into without legal capacity and the inability to use code as a defense to criminal and regulatory liability will still apply. Note that because contract law is governed by individual state law, rather than federal statutory or common law, laws might vary by jurisdiction.

B. Contractual Restrictions on Use

In new areas of technology, where regulators are slow to enter the market, first mover companies often frame the scope of user rights through contract.[302] Coinbase uses extensive User Agreements that govern rights to assets stored on the platform and the responsibilities that are associated with those assets.[303] Where there are no specific laws and regulations that govern the rights between, for example, a crypto exchange and its users, the exchange will fill the gaps with contract law (often contract law favorable to the platform) that it specifies in its User Agreements. Although this might exaggerate a power differential between users and platforms, competition between platforms, as well as user education, can help to reduce power gaps.

Because smart contracts do not automatically transfer intellectual property rights in purchased NFTs to users, terms of use on the NFT project developer website often specify how their NFTs may be used. Where these NFT purchaser licenses exist, they often allow NFT purchasers to use their NFTs on third party websites like gaming applications and Twitter PFP images but have restrictions on commercial uses of NFTs. For example, Cryptokitties places a cap on royalty free commercial uses and requires royalties after that point.[304] Others generally allow commercial uses of the owned NFT image. Yuga Labs, the creators of Bored Ape Yacht Club, launched an official licensing program called Made By Apes that verifies and amplifies products made by holders of Bored Ape Yacht Club NFTs.[305]

301. Primavera De Filippi, Morshed Mannan, & Wessel Reijers, *Blockchain Technology, and the Rule of Code: Regulation via Governance* (December 2, 2022) (unpublished manuscript).
302. *See* JULIE COHEN, BETWEEN TRUTH AND POWER (Oxford University Press 2019).
303. *See, e.g.*, Order Granting Motion to Compel Arbitration at *3, Kattula v. Coinbase Glob., Inc. (No. 22-CV-3250), 2023 WL 4373385 (N.D. Ga. July 6, 2023).
304. CryptoKitties, Terms of Use, CRYPTOKITTIES (last updated Nov. 15, 2018), https://www.cryptokitties.co/terms-of-use [https://perma.cc/34DW-GAMM].
305. Made by Apes, https://madeby.yuga.com/apes [https://perma.cc/YKS8-WDDB] (Last visited Oct 11, 2023).

VI. PRACTICAL ISSUES & MORE

A. Platform Liability for User-Based Content

Generally, online platforms are not legally liable for user-based content posted on their platforms.[306] The Communication Decency Act, Section 230 generally protects online platforms and other interactive computer services from liability for content posted by their users (although there are exceptions for criminal violations and intellectual property violations).[307] One might wonder, then, who is liable if a user of a blockchain places content that is harmful on the chain? Section 230's principles will likely apply to blockchain projects, NFT infringements, and other third-party content hosted on centralized servers. As noted above, most harmful blockchain content is stored on centralized servers due to size limitations of chain entries.[308] However, customers often expect recourse from major platforms, so even in the absence of liability, companies might try to avoid disputes with customers by mitigating the risk of unlawful activity on their platform.

Gaming platforms sometimes choose not to allow in-game items or customizations that are associated with third-party NFTs both to protect their customers and to avoid liability. On July 20, 2022, popular gaming platform Minecraft announced that "integrations of NFTs with Minecraft are generally not something we will support or allow."[309] Minecraft cited an ethos of scarcity and profiteering as justification for their decision to not allow integration with blockchain-based technologies, but also highlighted the risks of unreliable technology and disappearing or fraudulent NFT management.[310] If Minecraft were to allow their platform to be used as the middle man for NFT projects, it could dupe potential customers in ways that could lead customers to seek compensation from the platform through customer relations channels, regardless of whether Minecraft would be protected from legal liability under Section 230.

B. Jurisdictional Issues: Who and Where?

Victims of bad blockchain behavior might worry that it will be difficult to identify and obtain personal jurisdiction to sue wrongdoers.

306. *See* 47 U.S.C. § 230 ("No provider or user of an interactive computer service shall be treated as the publisher or speaker of any information provided by another information content provider."); *see also* 17 U.S.C. § 512 (providing a safe harbor for copyright infringement if platforms comply with the notice and takedown procedures on the DMCA).

307. 47 U.S.C. § 230 (making exceptions for child exploitation, obscenity, and other crimes, as well as intellectual property).

308. *Supra* section II.A.

309. *Minecraft and NFTs*, MINECRAFT (July 20, 2022), https://www.minecraft.net/en-us/article/minecraft-and-nfts [https://perma.cc/J2R8-349K].

310. *Id.*

However, legal avenues such as electronic service, Doe lawsuits, and *in rem* proceedings can help. Moreover, courts often find personal jurisdiction extends to individuals who engage in activities like social media marketing of unlawful projects to U.S. consumers because these actions are purposefully directed to the forum state and arise out of activity occurring there.[311]

Before a federal court can exercise jurisdiction over a person, they must be lawfully served with the complaint or summons against them.[312] Under Federal Rule of Civil Procedure 4, service can be made by giving a copy of the summons and complaint to a person who is an officer of the entity or registered agent for service of process, or serving them according to state law in the state where the court is located or where service is made.[313] In California, although service of process by traditional means like personal or mail service should be used where possible, California Code Section 413.30 provides that a court who sees no other way under the code to execute service may "direct that summons be served in a manner which is reasonably calculated to give actual notice to the party to be served and that proof of such service be made as prescribed by the court."[314]

In a case against Ooki DAO, which lacked an address or a registered agent for service of process, a federal court sitting in California granted permission to serve Ooki DAO via the only means of communication provided on Ooki DAO's website: a chat box and discussion forum.[315] The court found that discussions and voting among token holders about the lawsuit then showed sufficient proof of the effectiveness of that service.[316]

Individuals who are unknown, such as holders of particular wallet addresses, can also be sued as "Doe Defendants" until their identities can be determined.[317] Governments or other parties can use chain analysis software or internal or external experts to demask the identity

311. *E.g.*, Denying Motion to Dismiss at *5, McCollum v. Opulous (No. CV-2200587) 2022 WL 17218072 (C.D. Cal. Aug. 3, 2022) (finding, "Ditto's social media activities connect Ditto to the United States."); *but see* De Ford v. Koutoulas, No. 22-CV-652, 2023 WL 2709816, at *9 (M.D. Fla. Mar. 30, 2023) (finding no personal jurisdiction in Florida over Delaware and Puerto Rico resident defendants where plaintiffs were also not residents of Florida and therefore no harm was alleged to have occurred in Florida).

312. *See* Omni Cap. Int'l v. Rudolf Wolff & Co., 484 U.S. 97, 104 (1987).

313. FED. R. CIV. PRO. 4

314. CAL. CODE CIV. PROC. § 413.30 (1969).

315. Commodity Futures Trading Comm'n v. Ooki DAO, No. 22-CV-05416, 2022 WL 17822445, at *11 (N.D. Cal. Dec. 20, 2022).

316. *Id.* at *12.

317. Granting a Temporary Restraining Order at *2, Astrove v. Doe, No. 22-CV-80614, 2022 WL 2805315 (S.D. Fla. Apr. 22, 2022) (granting order against holder of wallet used to obtain funds via a spoofed cryptocurrency exchange website, where users believed the fund transfers were made to their wallet on the exchange but were actually being made to the anonymous wallet holder's personal accounts).

of wallet holders by tracing their transactions to one that reveals their identity, such as one connected to a real-world address, bank account, or a wallet at an exchange that collects a customer's identifying information like Coinbase or Kraken.[318] Courts can then issue a summons to the exchange, bank, or business to obtain the customer's information if the court determines there is a reasonable basis to do so (such as if there was potential tax fraud, crimes, or other unlawful behavior).[319] Lastly, government forfeiture actions can also be brought as *in rem* actions against the wallet or crypto asset itself where the property was used or intended to be used to commit specific crimes or constitutes the profits.[320]

Given the various measures that courts are able to take under existing laws to obtain service and jurisdiction over blockchain defendants and issue summons to demask them, it does not seem necessary to pass additional laws or regulations for more lax service of process. However, regulators should continue to push for exchanges and others facilitating blockchain transactions to collect sufficient customer information to demask unlawful actors who transact using their services.

VII. DISCUSSION

A. Changes Needed to Law? Blockchain and the Law of the Horse

Blockchain and the world of Web 3.0 provide many novel factual scenarios for the application of law. Nonetheless, traditional laws of finance, torts, contracts, and intellectual property will continue to apply to those transactions. Moreover, existing laws are often flexible enough to extend to new scenarios as technology develops. Indeed, it can be healthy for a legal system when old law governs new technology while Congress and regulators take time to fully understand the implications of new technology and potential gaps in the law before acting.[321] Yet clarity for the industry is also critical to direct investment of development resources towards lawful avenues.

Regulators have several choices when faced with new technology: engage in rulemaking as quickly as they find themselves sufficiently

318. *See e.g.*, *Investigations*, CHAINALYSIS, https://www.chainalysis.com/solutions/investigations/ [https://perma.cc/9Q88-MG8B] (last visited July 30, 2023).

319. *See* United States v. Payward Ventures, Inc., No. 23-MC-80029, 2023 WL 4303653, at *25 (N.D. Cal. June 30, 2023) (granting summons forcing Kraken to produce customer information in IRS tax investigations).

320. *See* 18 U.S.C. § 2253; United States v. Twenty-Four Cryptocurrency Accts., 473 F. Supp. 3d 1, 8 (D.D.C. 2020) (granting motion for default judgment for forfeiture of crypto wallets used to sell child pornography).

321. JOSHUA FAIRFIELD, RUNAWAY TECHNOLOGY 4 (Cambridge Univ. Press 2021) (in order for law to "keep pace with innovation . . . it must not only change, but embrace the concept of ongoing change . . . .").

informed of the technology, delay action to allow industry to develop, use enforcement tools under existing law and regulatory scope, encourage legislation, or let law be developed by courts without consideration of policy goals. Many in the industry want regulators to step in, provided that regulators come informed.[322] Yet under the current major questions doctrine, regulators might rationally decline to engage in rulemaking out of fear that courts will strike their rules down. Lawmakers might be unable to reach consensus or make informed policy in a timely fashion. Lawmakers and agencies can leave the judicial branch to decide the application of law but should not leave courts to the task of making policy. Courts are not adequately equipped for making policy because they lack the resources that are uniquely available to lawmakers, such as public hearings, committees, and accountability to constituents.[323] Moreover, many modern courts typically (and appropriately) are unwilling to make affirmative policy decisions to aid in deciding the scope and interpretation of legal rules.[324] If regulators and lawmakers do not act, the law will be made without consideration of policy implications, by courts applying old law.[325] This might yield the proper outcomes eventually, but it is not suitable for situations where lawmakers believe old law does not serve the policy goals they have for a new technology.

Even if new laws are not needed to remedy and prevent many types of harmful conduct in Web3.0, individual countries or states might choose to adopt new laws and regulations to further specific policy goals or goals of international competition. For example, Puerto Rico, seeking to attract entrepreneurs and investors, in 2012 passed laws that eliminated capital gains tax for those with residency on the island (which allows residents to sell crypto tax-free) and set a low corporate income tax of 4% for companies that export services.[326] As another

322. Lauren Feiner, *Prominent Silicon Valley VC firm Andreessen Horowitz embarks on major crypto policy push in Washington*, CNBC (Oct. 13, 2021), https://www.cnbc.com/2021/10/13/vc-firm-andreessen-horowitz-to-make-crypto-policy-push-in-washington.html [https://perma.cc/MV65-CUBR] (Tomicah Tillemann, then the global head of policy for venture capital firm Andreessen Horowitz (a.k.a. a16z), stated in interviews in 2021, "[I]t is absolutely critical that policymakers start to undertake the steps required to get this right.").

323. *See* ANTONIN SCALIA & BRYAN A. GARNER, READING LAW: THE INTERPRETATION OF LEGAL TEXTS xxiii, xxvii (2012); Christa J. Laser, *Equitable Defenses in Patent Law*, 75 U. MIAMI L. REV. 1, 69–72 (2020) (arguing that courts should not make policy determinations in individual patent law cases).

324. SCA Hygiene Prod. Aktiebolag v. First Quality Baby Products, LLC, 137 S. Ct. 954, 967 (2017) ("[W]e cannot overrule Congress's judgment based on our own policy views."); Dan L. Burk & Mark A. Lemley, *Policy Levers in Patent Law*, 89 VA. L. REV. 1575, 1669 (2003) (arguing that courts tend to get patent policy decisions wrong when they "wash their hands of involvement in the calibration of policy").

325. *See id*.

326. *See* Travis Lynk, *Puerto Rico Tax Incentives: The Ultimate Guide to Act 20 and Act 22*, RELOCATE PUERTO RICO (last updated Feb. 24, 2023), https://relocatepuertorico.

example, China created its own private blockchain, the Blockchain Services Network.[327]

Law enforcement must also enforce existing laws. This period of rapid tech growth and little regulation will be seen in the future as a brief Wild West of blockchain, like the Wild West of the internet in the days before it. In this time, significant money will have been made by actors not following the rules designed to protect unsophisticated investors and intellectual property holders, and more will have gone towards outright fraud. Law enforcement and prosecutors help to find the boundaries of the law in this new space.

Judge Easterbrook, in his speech on Cyberspace and The Law of the Horse, noted one limited change that might be needed to law when new technology emerges: the creation of property rights if none exist.[328] New property rights, or even rights to be free of novel types of injury or interference, can facilitate bargaining between private parties by setting the starting place of a negotiation: you own this thing I want, or you have a right to be free of the conduct I want to engage in, and therefore I will need to compensate you to lawfully obtain the item or engage in my conduct. One example, discussed above, where clarifying rights might be helpful to enable private bargaining is in the area of right of publicity. The United States does not have a federal right of publicity and it is unclear under various state laws whether use of a celebrity image in the sale of an NFT would constitute a violation.[329] To enable private bargaining and reduce new harms, the United States should enact a federal right of publicity that would extend to sales of NFTs depicting an individual without their consent.[330] NFTs are a fundamentally different market than sales in art prints because consumers believe that NFTs depicting a person are authorized by that person and NFTs are used throughout the web such as in profile pictures

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com/puerto-rico-tax-incentives-the-ultimate-guide-to-act-20-and-act-22 [https://perma.cc/NB8Q-D5YY]; Daniel Kuhn, *Living in Puerto Rico, Where the Taxes Are Low and Crypto Thrives*, CoinDesk (last updated Feb. 9, 2023), https://www.coindesk.com/markets/2021/08/12/living-in-puerto-rico-where-the-taxes-are-low-and-crypto-thrives/ [https://perma.cc/E6XZ-GNNV].

327. Xinmei Shen, *Company behind China's state-backed blockchain project aims to create Swift for stablecoins and CBDCs*, SCMP (Jan. 21, 2023), https://www.scmp.com/tech/tech-trends/article/3207599/chinas-state-backed-blockchain-project-aims-be-swift-stablecoins-and-central-bank-digital-currencies [https://perma.cc/7NEU-2Q8H].

328. Easterbrook, *supra* note 1, at 212.

329. Rothmann, *supra* note 264.

330. *See* Laser & Goldman, *supra* note 265. A federal right of publicity should also have takedown provisions similar to the DMCA's approach to copyright law and should also address the serious harms of noncommercial synthetic media depicting people in a false light or in ways that invade their privacy and autonomy. *Id*.

on Twitter in ways that art hung on a wall in a home is not.[331] Clear private rights would incentivize negotiation and compensation to those depicted.[332] Of course, any federal statute should incorporate limits to address First Amendment concerns, such as allowing parody uses of a celebrity's image in ways that are not misleading as to affiliation.[333]

Additionally, states might want to pass laws enabling new corporate forms for new innovations in corporate form like DAOs or specify that they may register as LLCs. Ensuring that entities are subject to the laws in ways that most closely align with how they operate, such as ensuring that voting members are liable for actions of a corporate entity governed entirely by vote would be most likely to ensure that voting members make lawful choices of how the entity will act. All types of entities should have a way to ensure appropriate legal accountability.

B. Consumer Education and Changes in Culture

Alternatively, if it seems that Web 3.0 culture is not aligned with the law, it might not be the law that should change. Lawmakers should be cautious of rapidly adopting new statutes to address a culture of exploitation. Instead, they might find that in several years, as individual and disorganized groups are replaced with venture-backed companies structured by top law firms to limit legal risk, the predominant culture of Web 3.0 will organically become more lawful.[334] This is, in fact, what happened with hacker culture as Web 2.0 shifted from individual websites to garage billionaires to Silicon Valley giants like Facebook and Microsoft.[335] These Web 2.0 institutions are now pervasive in every part of our day-to-day life and filled to the brim with a culture of compliance, securities, intellectual property law that could not have been imagined in the era of Napster, Limewire, and burned home CDs. The culture will shift to match the law as it becomes more traditionally-financed and mainstream. These shifts have already started to

331. *See, e.g.*, Will Gottsegen, *Twitter Launches NFT Profile Picture Verification*, COINDESK (May 11, 2023), https://www.coindesk.com/business/2022/01/20/twitter-launches-nft-profile-picture-verification/ [https://perma.cc/N7L8-X8P6].

332. If the law assigns a clear legal right to compensation for use of an image of another, then private actors will have no need to go to court to determine whether that right exists, but will prefer private negotiations in which the party using the image pays for use and where legal fees for the transaction are lower than litigation. *See* Lawrence Lessig, *The Law of the Horse: What Cyberlaw Might Teach*, 113 HARV. L. REV. 501 (1999) (noting that markets, which are formed through legal rights, can influence behavior).

333. *See supra* section IV.D.

334. *See* Kevin Werbach, *The Song Remains the Same: What Cyberlaw Might Teach the Next Internet Economy*, 69 FLA. L. REV. 887 (2018).

335. *Id.*

occur in the blockchain space.[336] Lawmakers should not act too soon but should instead wait to see whether blockchain culture will shift in response to legal enforcement under existing statutes.

The process of culture change could be accelerated (and ideally without millions expended on lawsuits) by providing more consumer and marketplace education. More scholars and lawyers should provide education to consumers about the scope of the law. Regulators and judges can provide clear explanations of their legal rules and enforcement intentions that are accessible to those without legal training. Those who understand the law should meet users of the technology where they are, explaining the law not only in scholarly journals but in TikTok videos and Instagram Reels and at conferences where Web 3.0 innovators go.[337]

Slowly, particularly as court cases advance and are publicized, Web 3.0 culture will change to adopt more legally valid contracts and set expectations in legally enforceable terms.[338] For example, Web 3.0 companies should adopt the use of express licenses, change business practices to follow existing standards, and educate lawmakers on their technologies and the good they can do. Smaller blockchain projects, consumers, and independent artists and creators should band together to form lobbying groups according to their needs to express their interests lest they lose out in legal reform efforts to those with more money and power like major exchanges.

Slowly, regulatory enforcement action will shift the culture. More sophisticated players in the space are emerging who want to follow the law and have pocketbooks deep enough to be sued. This will shift culture. As culture shifts and understanding of the law spreads throughout the community, regulators will no longer feel as inundated by wrongful conduct in this new technology space. All of this culture shift, however, begins with regulators, consumer groups, and competitors bringing lawsuits to show that old law can, and does, apply to blockchain technology too.

VIII. CONCLUSION

"The Law of Blockchain" is not a single, simple legal principle. Rather, like any new technology, blockchain projects are subject to existing laws in multiple fields ranging from securities to intellectual

336. Major players like Coinbase and Yuga Labs have tried to determine what legal steps are necessary and conform to them by, for example, collecting Know Your Customer information.

337. E.g., *10 Years of Decentralizing the Future: Dialogue, Discovery, and Dealmaking*, CONSENSUS CONFERENCE, https://consensus2024.coindesk.com/ [https://perma.cc/VE63-4DXB] (last visited Mar. 16, 2024).

338. *See* Lessig, *supra* note 332 (noting that one variation of regulating the internet is that the nature of the internet changes to be more regulated).

property to rights of publicity and even contractual disputes. Caselaw is only just starting to emerge to say exactly how these existing laws will apply in Web 3.0, but by understanding the context of broader legal principles applicable to technology and investment, makers and investors can find sufficient guideposts to help them understand and predict future legal developments.

This Article provides an overview of legal principles governing blockchain, Web 3.0, NFTs, and other projects in this new technology space, but it does so to show the larger legal principle that old law is often sufficient to solve legal disputes arising in a new technology area. In most technology areas, no new law is needed unless there is a failure of existing law to provide the rights to assist private bargaining, if existing law yields outcomes contrary to policy goals, or to address a new type or degree of harm. Moreover, sometimes regulators rationally delay acting either to gather information to assist their decisionmaking or, for agencies like the SEC that can alternatively resolve issues through court filings, the agency might rationally choose to avoid the risk of rulemaking being struck down by courts especially since the Supreme Court's latest major questions doctrine caselaw.