PART I

Introduction and Background

Introduction

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In the vast expanse of the digital age, technological innovations seem to burgeon with every passing day. Among these novelties, blockchain technology has solidified its position as a transformative force, paving the way for novel applications that transcend the boundaries of traditional digital paradigms. The ascent of blockchain has not only metamorphosed how we perceive and understand financial systems and transactions but has also ushered in a wave of possibilities in myriad sectors, most notably in the domain of digital assets – enter Non-Fungible Tokens (NFTs).

NFTs represent a radical shift from traditional conceptions of ownership, value, and originality in the digital world. This distinctiveness has garnered immense attention from artists, creators, collectors, investors, gamers, digital platform developers, realtors, marketers, community managers, and many others. But as with any groundbreaking technology, the law must evolve in tandem with it. The intertwining of blockchain and legal realms brings forth a plethora of complexities warranting an in-depth exploration of law and policy surrounding NFTs.

This Handbook comes at a pivotal juncture when the blockchain technology in general, and the cryptocurrency market in particular, is maturing and specific applications and tokens,[1] including such that are based on or powered by NFTs, are undergoing transformative developments. With the blockchain technology establishing roots in everything from supply chain management to voting systems, the relevance of its most vibrant offspring, NFTs, cannot be understated. But what becomes vital is understanding its implications, not just from technical, financial, and business perspectives, but also from legal and public policy standpoints, which have seen very little development.

[1] *See, for example*, Krisztian Sandor, *OpenTrade Unveils Tokenized U.S. Treasuries Offering as Tokenization Race Gains Steam*, CoinDesk (September 29, 2023), www.coindesk.com/business/2023/09/29/opentrade-unveils-tokenized-us-treasuries-offering-as-tokenization-race-gains-steam/; Ezra Reguerra, *Swiss Bank UBS Launches Tokenized Money Market Fund on Ethereum*, CoinTelegraph (October 2, 2023), https://cointelegraph.com/news/ethereum-ubs-tokenize-money-market-fund-launch.

THE LAW AND POLICY LANDSCAPE

NFTs – and cryptoassets more broadly – present a wide range of legal, regulatory, and policy challenges.

The years 2021 through 2024 were significant in the cryptoasset world, particularly in the realm of NFTs. The year 2021 witnessed an unprecedented surge in institutional adoption, with many large-scale corporations and financial institutions integrating or investing in cryptocurrencies. This era also saw the proliferation of decentralized finance (DeFi) platforms which aimed to replicate traditional financial services without intermediaries, offering novel ways of earning, borrowing, and lending. Concurrently, the NFT concept embarked on an extraordinary journey into the mainstream. Starting with rather unconventional use cases like virtual cats and monkeys, it gradually expanded into various aspects of our daily lives, from marketing to fashion to gaming, and saw massive institutional adoptions.

Against this background, by 2022, regulatory bodies around the world began to grapple more seriously with the crypto ecosystem. A notable development was the Executive Order the White House released in March 2022,[2] seeking to safely regulate the crypto industry in the near future. Although no US regulator has formally asserted jurisdiction over NFTs following the Executive Order, many regulators asserted oversight over different aspects of it, manifesting the challenge of categorizing this novel asset class, which may embody a variety of rights to digital or physical assets.

Illustrative examples include the Securities and Exchange Commission's (SEC's) first NFT-related enforcement action against Impact Theory, LLC, applying the *Howey* analysis,[3] which helped determine that NFTs are securities;[4] the Lummis-Gillibrand Responsible Financial Innovation Act,[5] which proposed that the majority of cryptoassets (including NFTs) be classified as commodities, which are primarily regulated by the Commodity Futures Trading Commission (CFTC); the FinCEN's comprehensive report on the money laundering (ML) and terrorist financing (TF) risks involved in the use of NFTs in art markets;[6] and the Biden administration's proposed tax framework for NFTs and other cryptoassets.[7]

Aside from the categorization challenge, the creation, use, transfer, and purpose of NFTs raise novel legal and policy questions. Lawsuits related to copyright and trademarks in the context of NFTs are progressively making their way into the

[2] Exec. Order No. 14,067, 87 Fed. Reg. 14,143 (Mar. 9, 2022).
[3] *SEC* v. *W.J. Howey Co.*, 328 U.S. 293, 298 (1946).
[4] In the Matter of Impact Theory, LLC, Securities Act Release No. 11226 (Aug. 28, 2023).
[5] S. 4356, 117th Cong. (2022).
[6] Press Release, US Dep't of the Treasury, Treasury Releases Study on Illicit Finance in the High-Value Art Market (February 4, 2022), https://home.treasury.gov/news/press-releases/jy0588.
[7] Hannah Lang, *Biden Administration Unveils New Crypto Tax Reporting Rules*, Reuters (August 25, 2023), www.reuters.com/markets/us/biden-administration-unveils-new-crypto-tax-reporting-rules-2023-08-25/.

courtroom, introducing cutting-edge questions.[8] New privacy and cybersecurity challenges, as well as reimagined manifestations of existing challenges, are also emerging in this evolving landscape, posing the challenges of aligning existing regulatory frameworks with the novel concept of NFTs and striking a balance between innovation and security.

MOVING FORWARD PAST THE "CRYPTO WINTER"

The increasing efforts to establish a regulatory framework for crypto sparked a variety of responses from the crypto community, ranging from staunch resistance to adaptive compliance. The industry responded with increased lobbying and sophistication but also experienced significant value drops as several major and widely known crypto players collapsed due to various reasons which resulted in what has been termed a "crypto winter."

Then, in 2023, a more realistic (and somewhat hesitant) adoption of blockchain technology started taking place in various sectors, including the financial industry,[9] while leading cryptocurrencies made a formidable comeback in the first half of 2023 and 2024.[10] The NFT markets, however, painted a starkly contrasting picture. While some cryptocurrency giants soared, the NFT realm grappled with a downturn. The trading volume of NFTs plunged and the total number of NFT sales also witnessed a drop. In fact, reports accentuated this decline by revealing a staggering 79 percent drop in NFTs minted on the Ethereum network in the first eight months of 2023.[11]

This unexpected downturn in the NFT market is arguably a confluence of several factors. An upsurge in competition owing to other blockchain networks making inroads into the NFT space played a role. Furthermore, the unpredictable volatility in cryptocurrency prices fostered an ambiance of market uncertainty. Another significant aspect was the saturation of the NFT supply which arguably surpassed the demand, leading to a market imbalance.

[8] *See, for example*, *Hermès Int'l* v. *Rothschild*, 590 F. Supp. 3d 647, 650 (S.D.N.Y. 2022); *Yuga Labs, Inc.* v. *Ripps*, 2023 WL 3316478 (C.D. Cal. Apr. 21, 2023).

[9] Jordan Smith, *Why Big Banks Like JP Morgan and Citi Want to Put Wall Street on a Blockchain*, CNBC (July 26, 2023), www-cnbc-com.cdn.ampproject.org/c/s/www.cnbc.com/amp/2023/07/26/why-big-banks-like-jpmorgan-want-put-wall-street-on-a-blockchain.html (discussing how U.S. financial institutions want to use blockchain to speed up trades on Wall Street, and $5 trillion in assets could be tokenized on blockchains in the next five years, according to reports).

[10] Wayne Duggan, *The 10 Best-Performing Cryptocurrencies of 2023*, U.S. News & World Report (July 18, 2023), https://money.usnews.com/investing/articles/the-10-best-performing-cryptocurrencies-of-2023 (describing how "[t]he 'crypto winter' has transitioned into summer in 2023, as investor concerns about a hard landing for the U.S. economy have somewhat subsided and appetite for risk assets has returned").

[11] *See, for example*, Edith Muthoni, *NFTs Minted on the Ethereum Network Down 79% Since the Year Began*, Trading Platforms (August 7, 2023, updated), https://tradingplatforms.com/blog/2023/08/07/nfts-minted-on-the-ethereum-network-down-79-since-the-year-began/.

However, the future of NFTs remains intriguing for several reasons. First, while their popularity may be waning in certain sectors, places like museums are showing a growing interest in these assets and embracing them more than ever. Second, there is a strong belief in the potential of NFTs, which have diverse and relevant applications across various industries. The crux of the challenge is to pinpoint the genuine value NFTs can provide beyond just community access and perks. What is pressing now is a shift toward tangible applications. While many perceive NFTs primarily as investments, their true potential might be found in other realms. For example, in the art world, artists can tokenize their work, providing a mechanism for collectors to verify the authenticity and provenance of their acquisitions. In the gaming industry, NFTs represent in-game assets like weapons or outfits and enable players to buy, sell, collect, or even trade these assets across different platforms. In education, NFTs have the potential to play a transformative role in credential certification and authentication as they can bring more trust, efficiency, and flexibility to the processes of learning recognition and skill verification. For musicians, NFTs can open up the realm of tokenized albums, tickets, or unique experiences, paving the way for direct sales to fans and potential royalties from secondary transactions and possibly simplifying royalty distributions and transfer rights. In addition, NFTs are being considered for representing one's digital identity, creating a more secure online environment. For fashion enthusiasts, digital clothing can become a valuable asset, especially in immersive virtual realities. In the luxury sector, with goods that have always grappled with authenticity issues, NFTs can help ensure provenance and counter counterfeits. In real estate, while it is ambitious to fully transform transactions using NFTs, aspects like title deeds can arguably benefit from some innovation. Lastly, the DeFi sector is eyeing NFTs as potential collateral or even using them for crypto-native and decentralized credit scoring, recordkeeping, and lending protocols' purposes.[12]

As technology progresses, the horizon for NFT applications is likely to broaden. This potential is particularly evident if NFTs can successfully establish a non-tech native audience, as such an achievement would further foster their growth and acceptance.

AN OVERVIEW OF THE HANDBOOK

Aimed at law enthusiasts, public policy advocates, computer technologists, finance aficionados, and business professionals, this Handbook serves as a beacon of knowledge, guiding readers through the intricate labyrinth of NFTs. Moving beyond the hype, the Handbook bridges the myriad gaps in understanding associated with

[12] *See, for example*, Nizan Geslevich Packin & Yafit Lev-Aretz, *Decentralized Credit Scoring: Black Box 3.0*, ABLJ (forthcoming 2024); Nizan Geslevich Packin & Yafit Lev-Aretz, *Crypto Native Credit Score: Between Financial Inclusion and Predatory Lending*, 45:3 Cardozo L. Rev. 845 (2024).

NFTs and critically assesses their implications in diverse contexts, separating true value from hype. Recognizing the novelty and interdisciplinary nature of NFTs, this Handbook offers an expansive yet thorough exploration of their intersections with the world of law and policy, encompassing not only the relevant legal frameworks, regulations, and established norms but also providing a guiding path for future policymaking within this dynamic domain.

Part I provides an introductory overview of NFTs, exploring the genesis of blockchain and NFTs, and the terminology underlying this ecosystem. In Chapter 1, Brian L. Frye offers a brief history of NFTs and the NFT market, beginning with the invention of blockchain technology, through the creation of the Bitcoin, Namecoin, and Ethereum blockchains, and the NFT phenomenon. In Chapter 2, Carla L. Reyes addresses the linguistic inaccuracies and misunderstandings that permeate discussions on blockchain technology and NFTs. Too often commentators employ inconsistent terminology and provide inaccurate definitions and descriptions, revealing a lack of understanding of how blockchain and NFTs function, which can hinder policymaking in this domain. Reyes discusses language landmines prevalent in blockchain and NFT discussions, helping to bridge this understanding gap.

Having understood what NFTs are – and more importantly, what they are not – as well as their historical context, Part II shifts to focus on the interactions of NFTs with financial regulation and the intricate task regulators face when trying to categorize NFTs: Are they commodities, securities, cryptocurrencies, or an entirely different class? In Chapter 3, Yuliya Guseva analyzes the economic reality of the rights, assets, and transactions associated with NFTs to help decision-makers to ascertain to which market an NFT belongs and which corresponding legal regime should govern. A special emphasis is given to the questions of whether and when federal securities laws may, and should, apply. In Chapter 4, Nizan Geslevich Packin and Uri Volovelsky focus on the ML and TF risks within the NFT market and survey global regulatory developments, compliance challenges, technological solutions, enforcement actions, collaborative efforts, and future trends. In Chapter 5, Eric C. Chaffee delves into the often overlooked promising role that state regulation – particularly in the areas of securities and virtual currency and money transmission – may play in addressing the prominent concerns posed by NFTs. In Chapter 6, Sean Stein Smith explores the complexities of taxing cryptocurrencies, examining factors such as classifying tax liabilities for various digital assets and the implications of crypto transactions on taxable events. Combined, these chapters provide a through overview of the interactions between NFTs and financial regulations, their associated challenges, and the implications for practitioners and policymakers.

Part III delves into the multifaceted world of marketing, branding, social platforms, fundraising, donations, and crowdfunding within the NFT landscape. In Chapter 7, Joan MacLeod Heminway examines the use of NFTs in financing nonprofits and political campaigns and offers guidance on core issues under applicable laws and regulations. Chapter 8, authored by Ido Sadeh and Moran Ofir,

supplements this examination by focusing more broadly on blockchain-based fundraising mechanisms – ranging from Initial Coin Offerings to Initial NFT Offerings – and on the asymmetric information problem in this context. In Chapter 9, Hamutal Schieber delves into the challenges and opportunities surrounding the use of NFTs as a marketing tool, highlighting the potential of NFTs as groundbreaking branding tools, but also raises concerns about their resemblance to controversial multilevel marketing schemes. Finally, in Chapter 10, Nizan Geslevich Packin explores the impact of NFTs on digital gaming, including innovative business models and their role in altering how users use, acquire, exchange, and sell virtual assets.

Part IV encompasses discussions on the intersection of NFTs and property rights – real property and intangible property – the minting of NFTs, the effect of NFTs on the concept of ownership, and their influence on the music, art, collectibles, and profile pictures (PFPs) sectors. In Chapter 11, Tyler T. Ochoa explores copyright implications associated with NFTs, with a focus on the concept of ownership and the question whether unauthorized minting of Non-Fungible Tokens (NFTs) is copyright violation under US, EU, and UK laws. Chapter 12, authored by Lital Helman and Ofer Tur-Sinai, supplements this discussion with a normative exploration of whether copyright law *should* forbid unauthorized minting of NFTs. They analyze this question under key theories that underly copyright law and conclude that the right to mint an NFT should be awarded to the author of the work that underlies the NFT. Against this background, in Chapter 13, Lawrence J. Trautman turns to examine the impact of NFTs on the art market and surveys recent developments in this context. Lastly, in Chapter 14, Juliet M. Moringiello and Christopher K. Odinet move to question one of the most frequently cited promises of NFTs – their use in real property transactions. Going beyond the hype, they argue that NFTs provide few, if any, benefits in this context, and explain why the potential use case for NFTs in the realm of property rights lies in the world of intangible property instead.

Part V explores data protection, privacy, and cybersecurity issues associated with blockchain and NFTs. A special focus is given to the processes and mechanisms in which information can be collected and transferred in the context of NFTs, data integrity and cybersecurity risks, and the policy issues. In Chapter 15, Jamiel Sheikh and Jiaying Jiang begin with a much needed technical analysis of NFT transactions work, highlighting vulnerabilities for creators' and users' data, and discussing the policy challenge of balancing between privacy interests and the need for transparency in the realm of NFTs. Chapter 16, authored by Scott J. Shackelford and Esfan Haghverdi, supplements the discussion by focusing on the cybersecurity perspective. It delves into the inherent risks and challenges associated with NFTs, and examines how existing laws and policies have addressed these issues and speculates on how they may evolve in the future. Having understood the potential risks and benefits associated with the use of NFTs in terms of data integrity and data security, in Chapter 17, Anjanette H. Raymond and Chris Draper move to analyze applications of NFTs and blockchain-based solutions within the supply chain context.

Recognizing the rapid advancements in NFT applications, Part VI offers insights into the emerging trajectories in the world of NFTs and their potential legal implications, encompassing fervor around the metaverse and the aspirational vision of Web 3.0 (or Web3).[13] In Chapter 18, Jon M. Garon examines the role of NFTs in the metaverse's emergence, emphasizing their part in enabling interoperability and consumer trust and reshaping various aspects of public life, ranging from work to education to entertainment. In Chapter 19, Amy J. Schmitz examines the resolution of disputes involving NFTs and smart contracts and proposing that parties turn to online dispute resolution (ODR) to efficiently and fairly resolve such disputes.

Finally, in Part VII, Kevin Werbach and Kristof Lommers, the authors of Chapter 20, culminate with a synthesized overview, presenting a potential prediction for the business, legal, regulatory, and policy dimensions of NFTs in the future.

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This Handbook embarks on an enlightening journey which seeks to understand the potential of NFTs, and delves deep into the different complexities associated with them, dissecting and understanding them, not just as digital assets or more specifically, cryptoassets but as a fusion of technology, art, finance, community, policy, and law. Through this exploration, the Handbook seeks to provide clarity, insight, and a comprehensive roadmap for the ever-evolving world of NFTs. Welcome to the intersection of the future!

[13] The term has been used to describe a futuristic Web in which the Internet would be more intelligent, semantically rich, and interconnected. As such, many envision it to offer a decentralized digital experience and users operating without intermediaries thereby enhancing their autonomy and privacy. Julia Y. Lee, *Trust and Social Commerce*, 77 U. Pitt. L. Rev. 137, 142 n. 21 (2015) (explaining that "[s]ome have begun referring to Web 3.0, a third generation of the Web, characterized by use of semantic web technologies, natural language processing, machine learning, and artificial intelligence technologies"); Zoe Niesel, *#personaljurisdiction: A New Age of Internet Contacts*, 94 Ind. L.J. 103, 137 (2019) (describing the goal of Web 3.0 applications). However, "[b]ecause it remains a collection of ideas more than anything else, it's challenging to nail down a precise definition of Web3" (ibid.).

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A Brief History of NFTs

Brian L. Frye

I INTRODUCTION

In the second millennium of the Common Era, the Internet comprehended just about all the known works of humankind and made them available to anyone with a computer. Its domains and protocols were governed by international organizations, and the image of neutrality and decentralized authority was decently preserved. But then, for better or worse, the blockchain revolution called it all into question. The purpose of this chapter is to describe one small part of that revolution, to deduce its role in challenging the prevailing order, and to speculate on whether it will be remembered or forgotten.

Of course, I am speaking of non-fungible tokens or "NFTs," a novel medium that seems at once ridiculous and inevitable. NFTs are cryptographic tokens that usually represent ownership of something, typically a digital artwork. They were conceived in 2014, and after a long gestation, suddenly expanded into a global bubble, which eventually popped, leaving a humbled, but functioning market.

It may seem premature to write a history of a medium that has only existed for about a decade. But time moves fast in the Internet Age, and yesterday is history before you know it. In a few short years, NFTs went from obscurity, to ubiquity, to catastrophe, to cliche. Who's to say where they will go next?

II WHAT IS AN NFT?

Essentially, an NFT is a blockchain entry that represents something other than a quantity of cryptocurrency. NFTs are "non-fungible" because each NFT is unique, unlike blockchain entries that represent a quantity of cryptocurrency. And NFTs are "tokens" because they typically represent ownership of something other than just the NFT.

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In theory, an NFT can consist of any kind or amount of data and can represent literally anything or nothing. However, most NFTs consist of as little data as possible and represent ownership of a digital artwork. Writing data onto a blockchain is costly, and the more data you write, the more it costs. Accordingly, NFT creators have an incentive to minimize the quantity of data included in their NFTs. Typically, an NFT consists of nothing more than the name of the NFT, the date it was created, the wallet address of the creator, and a URL pointing to a copy of the digital artwork the NFT represents. Each NFT is tracked by a "smart contract" that defines ownership of the NFT, usually written in the ERC-721 token standard.

NFTs have many potential uses. Businesses already use NFTs to track shipments and settle transactions, among other things, and are developing new uses all the time. But the primary use of NFTs is currently to represent ownership of digital artworks. The NFT market is essentially the cryptographic equivalent of the art market. So, to understand the NFT market, we have to understand the art market. But I think the NFT market can also help us better understand the economic realities of the art market.

As Walter Benjamin famously observed, the essence of art is authenticity, and the art market is a market for authenticity.[1] In the art market, collectors buy and sell unique physical objects such as paintings and sculptures. But it is not really the object that matters; it is what the object represents. An object is valuable in the art market only if it is authentic. In other words, the object is a physical token that represents ownership of an artwork. The art market does not actually value the object itself; it values the object's provenance, or the object's connection to the artist who created it. Without this connection, the object is worthless.

The NFT market is just a cryptographic version of the art market, in which collectors buy and sell NFTs that represent ownership of a digital artwork. The art market is a market for unique physical tokens, and the NFT market is a market for unique cryptographic tokens. Otherwise, they are identical.

It is no wonder the art market accepted NFTs so readily. They made perfect sense. In fact, NFTs are merely the cryptographic equivalent of the certificates of authenticity that conceptual artists and digital artists have been using for decades, with varying degrees of success. The only problem was that art collectors did not really understand certificates. Or, rather, they did not believe other collectors would want to buy them. So no one bought certificates because no one thought there was a market for them. And then it turned out there was, because conceptual art became cool and everyone thought they needed the permission of a certificate owner to show a work of conceptual art. They were wrong, but it was understandable, and it would have been awkward to show conceptual artworks without asking permission.[2]

[1] Walter Benjamin, The Work of Art in the Age of Mechanical Reproduction (1936).

[2] *See generally* Guy A. Rub, *Owning Nothingness: Between the Legal and the Social Norms of the Art World*, 2019 BYU L. Rev. 1147 (2020); and Peter Karol, *Permissive Certificates: Collectors of Art as Collectors of Permissions*, 94 Wash. L. Rev. 1175 (2019).