JSEL Journal of Sports & Entertainment Law
HARVARD LAW SCHOOL

NFT-tethered Sound Recordings and Digital Resale

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ABSTRACT

If consumers are buying ownership interests in Non-Fungible Token ("NFT")-tethered sound recordings, can they lawfully resell those interests under the Copyright Act? What exactly is the consumer buying—a digital sound recording, or a phonorecord? I argue that NFT consumers are purchasing fractionalized interests in a phonorecord from the copyright owner in addition to any interests they may acquire in the digital sound recording.

NFTs are not art and do not create copyrights. Rather, NFT sound recordings are a decentralized Digital Rights Management ("DRM") technology that tethers a unique phonorecord to a unique digital sound recording. NFTs have captured the attention of artists and public alike, with many musicians, like Calvin Cordozar Broadus Jr. (known professionally as "Snoop Dogg"), paying serious attention. Sales of Snoop's NFT-tethered album, *Bacc on Death Row* ("B.O.D.R."), totaled $44.3 million in five days, and the industry predicts that the NFT marketplace for sound recordings will become a multibillion-dollar one as early as 2025.

I explore this emerging marketplace and the economic implications of NFTs as a decentralized distribution channel. Distribution of copyrighted works invites potential copyright misuse, raising unresolved issues under the venerable first sale doctrine. Congressional resistance to codification of digi-

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tal first sale protections has resulted in increasing copyright misuse, made more apparent with this nascent technology. I weigh the advantages and disadvantages of three responses: (1) relying on Section 115's compulsory license scheme to check ongoing copyright misuse; (2) calling on Congress to extend Section 109's first sale protections to digital sound recordings; and (3) recognizing the NFT purchaser's acquired ownership interest to include both the digital sound recording and a fractionalized interest in the hard drive to which the NFT is tethered. Under the third response, Section 109's first sale doctrine covers the existing resale marketplace.

I. INTRODUCTION

NFTs are not art.[2] Nor do NFTs create property rights.[3] NFTs record, track, and enforce ownership and provenance of physical or digital assets,

[2] *See* Daniel J. Barsky, *Non-Fungible Tokens and Intellectual Property Law: Key Considerations*, HOLLAND & KNIGHT, https://www.hklaw.com/-/media/files/insights/publications/2021/07/nonfungibletokensandintellectualpropertylaw.pdf?la=ES (last visited July 4, 2022) (discussing how NFTs are not "[t]he underlying asset itself").

[3] *See* Joshua A.T. Fairfield, *Law of Non-Fungible Tokens*, 97 IND. L. J. 1261, 1263 (2022) (explaining how purchasing an NFT does not equate to acquiring property rights and owning the underlying data outright "because the intellectual property

like art, by tethering[4] an asset to a digital tokenized representation of ownership of that asset.[5] These tokens use smart contract technology to append these records to blockchain ledgers, most commonly using the Ethereum ledger. NFTs are most often used to track provenance in and facilitate the distribution of digital art, with early NFT offerings like Yuga Lab's Bored Apes Yacht Club ("BAYC") reaching $2 billion in secondary market activity.[6]

Notably, NFTs do not create copyrights; the Copyright Act does. Technology can decentralize a distribution channel; it cannot decentralize a statutory monopoly. Whether art appended to an NFT is copyrightable is a consideration collateral to the underlying technical functionality of the material object in which the copyrighted work is fixed. Ownership of the material object storing the tethered work should not be conflated with ownership of the copyright *per se*.[7]

By tethering a copy of a copyrighted work to a token, NFTs allow consumers to exchange ownership of a tokenized interest rather than the digital file.[8] The goal of this article is to define that interest, as whether one can "own" a digital file is a problem as old as computing technologies.[9] NFTs tethered to art, such as sound recordings, serve three purposes, acting

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regime that currently governs the internet is hostile to digital personal property ownership, imposing the contract-and-licensing regime").

[4] *See* Vallabhaneni, *infra* note 31.

[5] *See* Kimberly A. Houser et al., *Navigating the Non-Fungible Token*, UTAH L. REV. (forthcoming 2022) ("Tokenization is the conversion of a digital or physical asset into a digital unit of data to serve as a record of ownership or identity." Adding how a token, which is found on the blockchain, is a certificate of provenance or ownership); *see also* Henry Wager, *The Andy Warhol of Cryptocurrency: Legal Pursuit of Non-Fungible Tokens*, COLUM. UNDERGRADUATE L. REV. (Jan. 19, 2022) (noting how "[r]epresenting the rights or authority to something by ownership of another item [through] 'tethering' is a common occurrence").

[6] Raphael Minter, *Bored Ape Yacht Club Surpasses $2 Billion in All-Time Sales*, BE IN CRYPTO (May 5, 2022), https://beincrypto.com/bored-ape-yacht-club-2-billion-sales/ (detailing sales volume of NFT collections by market capitalization).

[7] 17 U.S.C. § 202 (1976).

[8] *See* Chris Odinet, *The Property Law of Tokens*, UNIV. IOWA PUB. POL'Y CTR., Nov. 2021, https://ppc.uiowa.edu/sites/default/files/property_law_of_tokens_policy_brief.pdf (explaining how there is no "connection between owning the NFT and owning the underlying thing. The only property right to protect is in the token itself, not the underlying asset").

[9] *See* MAI Sys. Corp. v. Peak Computer, Inc., 991 F.2d 511, 518 (9th Cir. 1993) (holding that Peak customers cannot be considered "owner[s]" of the software and as a result are not afforded protection under 17 U.S.C. § 117 (1988)); *see also* Joseph P. Liu, *Owning Digital Copies: Copyright Law and the Incidents Of Copy Ownership*, 42 WM & MARY L. REV. 1245, 1257–58 (2001) ("The MAI court concluded. . .that the

as (1) DRM systems that provide access and rights control to lawfully fixed, copyrighted works; (2) digital distribution channels that connect copyright owners and purchasers of media in a manner that lowers search costs; and (3) material objects under Section 101 of the Copyright Act, in some use cases.[10] The interplay of these three modalities defines the boundaries of the copyright owner's statutory interest in the tethered asset, as Congress defines it. I question whether consumers are buying a digital copy of the work, rather than an interest in the unique phonorecord in which the digital copy is stored.

Congress has long-standing concerns with encouraging a digital resale marketplace. Before the advent of digital computers in the 1960s, Congress believed that the start-up costs to engage in unlawful commercial reproductions of a sound recording were a sufficient economic safeguard against a copyright owner's right to distribute their own copies of a phonorecord.[11] Mass production of physical phonorecords was an industrial affair, requiring aggregation of large capital expenditures and physical inputs.[12] Additionally, Congress thought that the degradation inherent to copying a secondary of a master would stop the dissemination of unlawful copies from competing and displacing the sale of lawful ones.[13] Such secondary market activity was perceived as a threat to the economic incentives grounding copyright theory.

In the 1960s, Congress foresaw the advent of distributed file sharing and predicted that computers would lower the transaction costs of reproduction and distribution of sound recordings to zero.[14] With the economic barriers to engage in mass commercial piracy eliminated, and the creation of perfect nonrivalrous copies of digital works, Congress took the position that there was no public benefit to extending the first sale protections to the resale of digital files.[15] Congress affirmed this public policy determination when it adopted the Copyright Registrar's 2001 Report on the Digital Mil-

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statutory privilege was not available because the user in the case was not an 'owner' of the program, but merely a licensee").

[10] *See infra*, Section III.

[11] DMCA § 104 Report 97 (2001) ("Time, space, effort and cost no longer act as barriers to the movement of copies, since digital copies can be transmitted nearly instantaneously anywhere in the world with minimal effort and negligible cost").

[12] DMCA § 104 Report 82 (2001) ("The need to transport physical copies of works . . . no longer exists in the realm of digital transmissions").

[13] *Id.*

[14] *Id.*

[15] *Id. See also* Bobbs-Merrill Co. v. Straus, 210 U.S. 339, 350-51 (1908) (holding judicial first sale doctrine prohibits a copyright owner from qualifying lawful first purchaser's title, right to resell, or alienate lawfully made copies of works); 17 U.S.C. 109 (1976) (codifying the judicial first sale doctrine).

lennium Copyright Act ("DMCA"). However, neither Congress, the DMCA Report, nor the caselaw in this area contemplated a digital distribution platform that facilitated the resale of specific material objects fixed in specifically identifiable digital works – the NFT.

NFTs provide technological solutions to two of Congress' greatest concerns: the incidental destruction of economic safeguards against commercial piracy through the enablement of digital distribution of lawfully created digital sound recordings *without an act of reproduction* necessary to facilitate the transmission of the work digitally;[16] and the market displacement of nonrivalrous digital works.

This Article demonstrates how NFTs address those concerns. Section II starts with a short discussion on the technical and economic function of NFT technologies.[17] An examination of NFT-tethered sound recordings under the Copyright Act follows in Section III, focusing on how Sections 106 and 117 enable lawful NFT use, the interplay of the reproduction and distribution rights under Sections 106(1) and 106(3), and the implications of NFTs on the policy goals of Section 109.[18] Section IV explores three possible paths forward: (1) application of the compulsory license scheme found in Section 115, (2) legislative extension of the first sale doctrine under Section 109 to digital files, and (3) judicial application of Section 109 to the

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[16] *See* London-Sire Recs., Inc. v. Doe 1, 542 F. Supp. 2d 153, 166 (D. Mass. 2008) (explaining that an individual violates the distribution right under Section 106(3) when his/her actions "do more than 'authorize' a distribution; they must actually 'do' it"); *see also* Nat'l Car Rental Sys., Inc. v. Computer Assocs. Int'l, Inc., 991 F.2d 426, 434 (8th Cir. 1993) (stating that "'[i]nfringement of [the distribution right] requires the actual dissemination of either copies or phonorecords'"); *see also* Enrico Bonadio et al., *NFTs and Copyright: Some Burning Issues*, KLUWER COPYRIGHT BLOG (July 21, 2022), http://copyrightblog.kluweriplaw.com/2022/07/21/nfts-and-copyright-some-burning-issues/ (putting forth two arguments surrounding NFTs and Section 106's reproduction right: (1) NFTs do not violate the reproduction right because "NFTs do not include a copy of the work, but rather only include the associated 'hash' or URL" (emphasis added) (2) NFTs may violate the reproduction right because "the process of creation of a 'hash' is deterministic. . .the 'hash' constitutes a translation of the underlying artistic work" covered by Section 106 (emphasis added)); *see also* Peter Mezei et al., *The Rise of Non-Fungible Tokens (NFTs) and the Role of Copyright Law – Part II*, KLUWER COPYRIGHT BLOG (Apr. 22, 2021), http://copyrightblog.kluweriplaw.com/2021/04/22/the-rise-of-non-fungible-tokens-nfts-and-the-role-of-copyright-law-part-ii/ (explaining that because the underlying data is tokenized and sold as an NFT, an "NFTs [is just] metadata pointing to a . . . work," making them non-violative of a copyright owners distribution and reproduction right).

[17] *See infra,* Section II.

[18] *See infra*, Section III

underlying phonorecords, to which the NFT has been tethered.[19] I conclude by endorsing the third approach.

II. NFTs

A. What are NFTs?

NFTs are digital tokens appended to blockchain ledgers using one or more smart contracts. A smart contract is an autonomous computer algorithm that merges language of obligation and performance within a single digital instrument upon the occurrence of one or more conditions.[20] The term "smart contract" is a misnomer, as smart contracts are neither "smart" in an intelligence context nor legally enforceable contracts *per se*.[21] Rather,

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[19] *See infra,* Section IV.

[20] *See* Michelle Adams, *In with the New, But Out with the Old?*, UNIV. OF MIA. L. REV. (2021), https://lawreview.law.miami.edu/blockchain-smart-contracts/ (explaining how smart contracts function by using conditional statements coded in the blockchain and elaborating on how the conditions coded into the blockchain "must be met in order for the said actions to be executed"); *see also* James Grimmelmann, *All Smart Contracts Are Ambiguous*, 2 J. OF L. & INNOVATION 1 (2019) (explaining how smart contracts "are executed by hardware and software" and how "[t]he program updates as th[e] [parties] perform their obligations").

[21] While the enforceability of individual NFTs is beyond the scope of this paper, many early NFT offerings are unenforceable. Examples include those that contain illusory terms, fail to comply with Section 204's signed writing requirement, or are void as a matter of public policy for violating Federal and State gambling laws regulating 'lootboxes' or 'stashboxes.' The fact that the algorithm permits autonomous execution of code does not make code law. *See* Scott A. Burroughs, *NFTs And Copyright: What You See Is Not What You Get*, ABOVE THE LAW (Feb. 18, 2022), https://abovethelaw.com/2022/02/nfts-and-copyright-what-you-see-is-not-what-you-get/ (noting how the blockchain "receipt" does not comply with Section 204(a)'s requirements and adding that "[w]hen an NFT associated with a work of art is sold, it is almost never the case that the author signs anything transferring any rights in the work"); *see also* Stuart D. Levi et al., *An Introduction to Smart Contracts and Their Potential and Inherent Limitations*, HARV. L. SCH. F. ON CORP. GOVERNANCE (May 26, 2018), (adding how "[c]ourts. . . may be hesitant to enforce a smart contract where the consumer [did not receive sufficient notice of the terms of the agreement]"); Diane Flannery et al., *Blockchain, Cryptocurrency and Non-fungible Token Litigation Primer: A Look at McKimmy v. OpenSea*, MCGUIREWOODS (Feb. 28, 2022), https://www.mcguirewoods.com/client-resources/Alerts/2022/2/blockchain-cryptocurrency-non-fungible-token-litigation-primer (noting the elements of an express or implied contract—offer, acceptance, consideration, mutual assent, capacity, and legality —and stating how "[i]n the analog world, contract language is bound by the four corners of the contract, and so long as contracts 'are clear and unambiguous, parole or extrinsic evidence antecedent or contemporaneous to the contract is inad-

an NFT smart contract automates outputs based on autonomous inputs gathered by the computer program in or associated with the NFT.

While there is no consensus as to what a blockchain ledger is, most, including Ethereum, are encrypted, substantially immutable, redundant, and consensus-based distributed ledgers hosted on a peer-to-peer computer network.[22] Foundationally, a blockchain ledger stores groups of data into blocks using encryption, with individual blocks linked together in chains of transactions that form a blockchain—a chain of records—like the title records maintained in a county recording office.[23] Rather than rely on intermediaries, these systems dis-intermediate trust in the authenticity of provenance records through encrypted proof-of-work or proof-of-stake incentive models.[24]

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missible to vary, contradict, or add terms to the contract'") (citing *Sterling, Winchester & Long, LLC v. United States*, 83 Fed. Cl. 179, 184 (Fed. Cl. 2008)). While concluding on how: (1) "[t]here has been practically no analysis on smart contracts under settled legal principles at this time[;]" (2) a majority of states have not passed legislation with respect to smart contracts; and (3) the court in the case of *McKimmy v. OpenSea*, 22-cv-00545 (S.D. Tex. Feb. 18, 2022) "will provide context for how courts will analyze blockchain, NFTs, smart contracts under current analog laws." Ultimately, discussing the subject of the enforceability of smart contracts, who can enforce them, and whether UCC § 3-203 (b) will apply to NFT transfers allowing grantees to be sheltered from other claims from a bona fide purchaser).

[22] *See* Zachary L. Catanzaro & Robert Kain, *Patients as Peers: Blockchain Based EHR and Medical Information Commons Models for HITECH Act Compliance*, 44 NOVA L. REV. 289 (2020); *see also* James Grimmelmann et al., *Blockchains as Infrastructure and Semicommons*, WILLIAM & MARY L. REV. (forthcoming 2023), ("Blockchains are ledgers, and as such they are infrastructure . . . [A] blockchain can be used not just to record information about property rights in already-existing off-chain assets, but to create and enforce property rights in new on-chain assets").

[23] *See* Eric D. Chason, *How Bitcoin Functions As Property Law*, 49 SETON HALL L. REV. 129 (2019) (analogizing a blockchain to a public records office, adding that blockchain "replicates the recording of deeds, a process by which formally valid transactions between two parties become essentially a public record").

[24] *See* Primavera De Filippi et al., *Blockchain as a confidence machine: The problem of trust & challenges of governance*, 62 TECH. IN SOC'Y AN INT'L J. 1, 7 (2020) (stating hot blockchain-based networks—Proof of Work or Proof of Stake—aims "to distribute trust . . . [and] reduc[e] risk of individual opportunism"); *see also* Kurt Yaeger et al., *Emerging Blockchain Technology Solutions for Modern Healthcare Infrastructure*, J. SCI. INNOVATION IN MED. 1, 2 (2019) (differentiating existing payment models that require a third-party intermediary from blockchain and explaining that "[w]ithin a traditional transaction, the presence of centralized institution . . . introduces the possibility of bias . . . [and] dishonesty" but a "'blockchain' is a decentralized, distributed ledger of digital transactions that allows a trustless exchange of money or data").

NFTs use a standard Application Programming Interface ("API"), such as the Ethereum-based ERC-721 API, to "track distinguishable asset [ ] ownership individually and atomically."[25] ERC-721, for example, requires "[e]very NFT [to be] identified by a unique uint256."[26] ERC-721 contains standard transfer mechanisms for denoting a change in ownership.[27] An ERC-721 NFT may include other restrictions on alienation, such as identification of prior art or blacklisted hash identifiers.[28] ERC-721: (1) automates the payment of transaction costs on the ledger, "gas fees"; (2) contains provisions for the creation or deletion of tokens ("minting" and "burning," respectively); (3) creates downstream royalty conditions; and (4) automates the transfer of ownership records for digital assets appended to the Ethereum blockchain ledger upon a consummate transaction.[29] Together, these smart contract provisions tether the ownership of identifiable digital assets on blockchain ledgers to a token.[30]

Tethering is an abstraction of technological access controls.[31] For digital files, tethering creates a link between the NFT and the digital asset file

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[25] *See* William Entriken et al., *EIP-721: Non-Fungible Token Standard*, ETHEREUM IMPROVEMENT PROPOSALS (Jan. 24, 2021), https://eips.ethereum.org/EIPS/eip-721 (listing "LAND in Decentraland, the eponymous punks in CryptoPunks" as examples of NFTs that use a standard API and propounding the idea that using a standardized interface that permits for "cross-functional asset management and sales platforms" will strengthen the NFT space).

[26] *See* Develop, *Integers,* DEVELOP, *https://docs.soliditylang.org/en/develop/types.html#integers* (last visited Oct.16, 2022) (a "Uint256" is an unsigned integer of up to 256 bits which serves as a hash identifer,); *see also* Investopia.com, *What is a Hash?*, M https://www.investopedia.com/terms/h/hash.asp (Jan. 13, 2022) (Hashes serve two important functions: 1) each block header contains the hash of the block header, linking them into a blockchain; and 2) proof-of-work mining uses hashing as part of the mathematical burden imposed on miners, to make it difficult for a bad actor to overcome the blockchain ledger); *see also Id.*

[27] *Id.*

[28] *Id.*

[29] *Id.*

[30] *Id.*

[31] *See* Pratin Vallabhaneni, *The Rise of NFTs–Opportunities and Legal Issues*, WHITE & CASE (Apr. 20, 2021), https://www.whitecase.com/insight-alert/rise-nfts-opportunities-and-legal-issues (illustrating how "this technology lays the foundation for creators to have more control over the value and the conditions of the sale of their digital creative works and create new distribution channels of art, performance access, or other valuable property"); *see also* Jacob Kastrenakes, *Your million-dollar NFT can break tomorrow if you're not careful*, THE VERGE (Mar. 25, 2021), https://www.theverge.com/2021/3/25/22349242/nft-metadata-explained-art-crypto-urls-links-ipfs (explaining that tethering occurs when "NFTs use *links* to direct you to somewhere else where the art and any details about it are being stored").

itself.[32] Whether the file is saved on-chain or off-chain is generally immaterial, however most sound recording NFTs are stored off-chain for reasons of cost.[33] An access control, as the name suggests, prevents unauthorized access to the underlying file. This does not, however, mean that the NFT bars public access to the digital asset as a *per se* rule, as often the purchaser of an NFT has acquired an assignment of a public performance or display right from the copyright owner.[34]

Thus, NFTs also serve as a rights-control mechanism.[35] Many existing NFTs purport to transfer or license one or more of the Section 106 rights to the direct or secondary purchasers of the NFT.[36] These transfers require a signed writing under Section 204 of the Copyright Act and need to comport with contract law principles for enforceability, but such issues are outside the scope of this Article.[37] For present purposes, it is enough to note that nearly all current NFT use cases result in an express or implied license to the sold work, rather than the true alienation of the digital file in fee simple.[38]

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[32] *See* Vallabhaneni, *supra* note 31 (explaining how an NFT and digital asset are connected via a link).

[33] *See* Kristen E. Busch, *Non-Fungible Tokens (NFTs),* CONG. RSCH. SERV., R47189 (July 20, 2022), https://crsreports.congress.gov/product/pdf/R/R47189 (noting that storing on-chain is expensive and inefficient because blockchains have limited storage space and high network traffic. Thus, a majority of underlying NFT assets, including sound recordings, are stored off-chain).

[34] *See* Daniel Anthony, *Commercializing NFTs – generating value from digital assets and intellectual property rights*, JDSUPRA (Mar. 2, 2022), https://www.jdsupra.com/legalnews/commercializing-nfts-generating-value-1110648/ (explaining a purchaser of an NFT obtains a limited right, such as the right to display the underlying asset of an NFT).

[35] Steve Kaczynski et al., *How NFTs Create Value*, HARV. BUS. REV. (Nov. 10, 2021), https://hbr.org/2021/11/how-nfts-create-value ("[i]t's not an accident that so many of the early NFT projects are built around digital rights management, since that's one of the most direct applications of the technology.").

[36] *See* Anthony, *supra* note 34 ("NFT License has been adopted by several prominent NFT projects such as CryptoPunks and Meebits.").

[37] *See* Flannery, *supra* note 21 (raising the issue of whether UCC § 3-203 (b) will apply to NFT transfers allowing grantees to be sheltered from other claims from a bona fide purchaser).

[38] Of course, one could easily construe most NFT smart contracts as purporting to assign an interest in fee determinable rather than under an implied license, as has been customary in digital file marketplaces for the last quarter century. Such interpretation issues are beyond the scope of this paper.

B. The Economics of NFT-tethered Sound Recordings

NFTs offer several major advantages over existing DRM technologies, which have incentivized rapid marketplace adoption. First, by creating technologically controlled provenance, stakeholders in a blockchain ledger are disincentivized from committing fraud against the ledger's ownership records.[39] Second, by providing access and copy controls of digital works of authorship in a manner that does not require an act of reproduction, NFTs facilitate the lawful distribution and resale of digital works of authorship.[40] Third, artists can use technological rights terms within smart contracts to ensure downstream royalty payments.[41] Finally, by connecting artists directly with consumers on digital secondary marketplaces, NFTs reduce the need for investing in capital intensive marketing and distribution associated with traditional content distribution models.[42] This arguably lowers ex-

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[39] *See* Ross Mauri, *Three features of blockchain that help prevent fraud*, IBM SUPPLY CHAIN AND BLOCKCHAIN BLOG (Sept. 19, 2017), https://www.ibm.com/blogs/blockchain/2017/09/three-features-of-blockchain-that-help-prevent-fraud/; *see generally* Satoshi Nakamoto, *Bitcoin: A Peer-to-Peer Electronic Cash System*, BITCOIN.ORG, https://bitcoin.org/bitcoin.pdf (Aug. 29, 2022) (outlining the mechanisms inherent in a distributed ledger system such as a blockchain ledger in mitigating the potential for fraud).

[40] *See* Enrico Bonadio, *NFTs and Copyright: Some Burning Issues*, KLUWER COPYRIGHT BLOG (July 21, 2022), http://copyrightblog.kluweriplaw.com/2022/07/21/nfts-and-copyright-some-burning-issues/ ("In the context of NFTs, since the underlying work is created digitally, tokenizing and selling it as an NFT would not violate the distribution right[.]"); *see also* Kimberly Adams & Sasha Fernandez, *How Does Copyright Law Affect The Sale and Distribution of NFTs?,* MARKETPLACE TECH, at 2:36 (Feb. 7, 2022), https://www.marketplace.org/shows/marketplace-tech/how-does-copyright-law-affect-the-sale-and-distribution-of-nfts/ (explaining that because an NFT acts like a URL, "there's not really a copyright element that comes into play because the original art is not being adapted or distributed or copied in a meaningful way.").

[41] *See* Pratin Vallabhaneni & Adam Chernichaw, *How Do NFT Royalties Work*, TALKSONLAW (June 18, 2021), https://www.talksonlaw.com/briefs/how-do-nft-royalties-work; *see also* King & Spalding, *Not Your Standard Orange Grove: Non-Fungible Tokens & Securities Laws*, KING&SPALDING (June 16, 2021), https://www.kslaw.com/news-and-insights/not-your-standard-orange-grove-non-fungible-tokens-securities-laws ("One key characteristic of NFTs is provable control. [ ] NFTs can [ ] be accompanied by 'smart contracts,' which allow the seller to place conditions on the token-holder's rights, such as royalty payments to the original NFT creator. The conditions of an NFT's underlying smart contract are designed to be automatically enforced by the NFT's code on the blockchain.").

[42] *See* Reto Hofstetter et al., *Crypto-marketing: how non-fungible tokens (NFTs) challenge traditional marketing*, SPRINGER (July 29, 2022), https://link.springer.com/article/10.1007/s11002-022-09639-2.

isting barriers to entry for new authorship, creating consumer surplus through lowered search and acquisition costs for buyers and sellers of works of creative art.

NFTs achieve these goals through asset tokenization. Tokenization is a legal abstraction that has existed in the common law for centuries.[43] Tokens allow parties to transfer legal rights in an underlying asset through exchange of a unit representing proof of ownership rather than transferring physical possession of the underlying asset.[44] The use of tokens lowers transaction costs as parties no longer need to physically exchange possession and control over an asset to transfer ownership in the tokenized physical or digital asset.[45] These in turn facilitate more efficient distribution markets for assets that would otherwise be difficult to alienate, making those assets more (or less) saleable within a particular marketplace.[46]

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[43] *See* Rahul Dev, Legal Requirements Before Launching Cryptocurrency Token, RAHUL DEV, https://patentbusinesslawyer.com/legal-requirements-before-launching-cryptocurrency-token/ (last visited Nov. 1, 2022); *see also* Juliet M. Moringiello & Christopher K. Odinet, *The Property Law of Tokens,* FLA. L. REV. 615. (forthcoming 2022) ("While not always called this by name, doctrinal tokenization has happened for many centuries—specifically, legal concepts have developed to recognize that a single thing can indeed be configured so as to actually represent rights—including property rights—in something else."). *See generally* Elev8, *What Is Tokenization? — A Guide to Putting Assets on a Blockchain*, ELEV8 (Sept. 24, 2019), https://www.elev8con.com/what-is-tokenization-a-guide-to-putting-assets-on-a-blockchain/ ("Tokenization is the process of converting physical (and non-physical) assets into digital tokens on a blockchain.").

[44] *Id. at 615-616*

[45] *See* Steve Kaczynski & Scott D. Kominers, *How NFTs Create Value*, HARV. BUS. REV. (Nov. 10, 2021), https://hbr.org/2021/11/how-nfts-create-value (noting how "NFTs have fundamentally changed the market for digital assets. Historically there was no way to separate the "owner" of a digital artwork from someone who just saved a copy to their desktop. Markets can't operate without clear property rights: Before someone can buy a good, it has to be clear who has the right to sell it, and once someone does buy, you need to be able to transfer ownership from the seller to the buyer." Further explaining that the use of tokens—such as NFTs—lower transaction costs "by giving parties something they can agree represents ownership." In doing so, they make it possible to build markets around new types of transactions—buying and selling products that could never be sold before, or enabling transactions to happen in innovative ways that are more efficient and valuable.).

[46] *See* Kurt Yaeger et al., *Emerging Blockchain Technology Solutions for Modern Healthcare Infrastructure*, J. SCI. INNOVATION IN MED. 1, 24 (2019).

Assets can be either economically fungible or non-fungible.[47] A fungible asset is freely exchangeable with another unit of that asset.[48] Fungible assets are not unique as to one another.[49] Assets are non-fungible when they cannot be freely exchanged with another unit of the same asset.[50] Works of art can be fungible or non-fungible, depending on how reproducible the material object in which the work of authorship has been fixed is. Despite their legal status in the public domain, the original *Mona Lisa, Venus de Milo,* and *Wedding Feast at Cana* displayed in the Louvre remain economically non-fungible—*unique en son genre.* Each of these masterpieces is uniquely tied to the provenance of its creation. The prints, reproductions, and photographs sold downstairs in the Louvre's gift shop, however, are fungible, with any one reproduction being freely exchangeable with another. As the works belong to the public domain, anyone is free to make their own copies of the originals.[51] Copyright law draws similar distinctions between material object and copyright.[52] In the *Mona Lisa*'s case, the material object, *i.e.*, the combination of the specific canvas and paint through the acts of Leonardo da Vinci's labor, is non-fungible; the paper and ink used to make the mechanical reproductions are fungible. The same is true for sound recordings, with the master phonograph (or set of masters) being a non-fungible material object, and the copies being fungible.

A digital reproduction of a digital file is a (near) perfect reproduction of the original, resulting in no diminution of the value of the original copy upon an act of reproduction.[53] The copy does not interfere with the first owner's interest in the first file, nor does it suffer degradation in value. The fact that a reproduction of a digital sound recording results in a "perfect

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[47] *See* Cambridge Univ. Press 2022, *Fungible,* CAMBRIDGE UNIV. PRESS 2022, https://dictionary.cambridge.org/us/dictionary/english/fungible (last visited Aug. 29, 2022) (defining "fungible" as "easy to exchange or trade for something else of the same type and value").

[48] *Id.*

[49] *Id.*

[50] *Id.*

[51] The fungibility of a public domain copy would be contingent on the craftsmanship and quality of the reproduction. The law, however, would deem the passing of a copy off as an original an act of fraud, preserving the non-fungibility of the original despite its lapse into the public domain under the French copyright regime.

[52] 17 U.S.C. § 202 (1976) ("Ownership of a copyright, or of any of the exclusive rights under a copyright, is distinct from ownership of any material object in which the work is embodied.").

[53] *See* U.S. Copyright Office's Digital Millennium Copyright Act, § 104 Report at xix (Aug. 29, 2001) ("Physical copies degrade with time and use; digital information does not.").

copy" has been the key factor in Congress' continued refusal to extend the codification of the common law first sale doctrine in Section 109 of the Copyright Act to digital resale.[54]

The commercial availability of digital recordings in the 1980s lowered the economic barriers preventing wide-spread music piracy.[55] Older analog technologies could not create a perfect copy of a phonorecord, leading to sound degradation in any copy of the work. Further, because the technology was primitive, the start-up costs necessary to engage in large scale economic piracy were an added disincentive against piracy. Digital copying techniques, however, result in mostly lossless copies of the original file, "allow[ing] thousands of perfect or near perfect copies (and copies of copies) to be made from a single original recording."[56]

Thus, a digital copy of a sound recording is intrinsically fungible without the application of a DRM system. NFTs are novel as a DRM system because they transform fungible digital copies of works of authorship that could be fixed in any hard drive into nonfungible works fixed in a specifically identifiable material object. In tethering the digital object to an NFT, the tokenization process creates non-fungibility. This non-fungibility may create artificial scarcity in the digital asset if the NFT limits further tokenization of the digital asset.[57] Artificial scarcity, in turn, influences consumer behavior within a given marketplace.[58]

Artificial scarcity defines the early NFT sound recording marketplace. Borrowing from economic concepts created and refined in the video game and collectible trading card industry, NFTs have implemented randomization of these nonfungible tokens to influence consumer demand on an

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[54] *Id.* ("Works in digital format can be reproduced flawlessly, and disseminated to nearly any point on the globe instantly and at negligible cost.").

[55] *See* Recording Indus. Ass'n of Am. v. Diamond Multimedia Sys., 180 F.3d 1072, 1073 (9th Cir. 1999).

[56] *Id.*

[57] Shipra Gupta, *The Psychological Effects of Perceived Scarcity on Consumers' Buying Behavior*, DIGITALCOMMONS@UNIVERSITY OF NEBRASKA - LINCOLN (June 17, 2013), https://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1045&context=businessdiss (arguing that scarcity, whether exogenous or endogenous, real or artificial, enhances consumer perceptions of value).

[58] *See* Rebecca Carroll, *NFTs: The Latest Technology Challenging Copyright Law's Relevance Within a Decentralized System*, 32 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 979, 990-991 (2022) (explaining the economic incentives to NFT artists and consumers).

emerging speculative asset class.[59] In February of 2022, Snoop Dogg released NFTs of his new album, *B.O.D.R.*, in a limited release of 25,000 "stashboxes."[60] Each stashbox randomly contains one of the seventeen album tracks at an initial sale price of $5,000.00. Snoop's *B.O.D.R.* NFTs sold $44 million in five days, partly on speculative hype generated through operant conditioning.[61]

Other artists have mixed services into their NFT offerings. The Kings of Leon's March 2022 release of *When You See Yourself* was the band's first foray into the NFT marketplace, arising from their frustration with the low royalty rates offered by digital streaming.[62] Launching on both traditional streaming platforms and digital music stores, a purchase of a $50.00 limited release NFT version of the album came with enhanced features, including a digital visual album cover, a physical vinyl copy, and a chance at winning a "golden ticket" at auction.[63] Minting just eighteen golden tickets, the band released six of them to the public, with the purchaser of the ticket getting free lifetime tickets to the band's shows, special merchandise, and VIP treatment at concerts.[64]

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[59] Whether NFTs are or should be deemed securities or commodities is outside the scope of this Article. Whether lootboxes or stashboxes should be regulated as gambling is also outside the scope of this Article.

[60] Murray Stassen, *Snoop Dogg Sells Over $44M Worth of 'Stash Box' NFTS in Just Five Days,* MUSIC BUSINESS WORLDWIDE (Feb. 15, 2022), https://www.musicbusinessworldwide.com/snoop-dogg-sells-over-44m-worth-of-stash-box-nfts-in-just-five-days123/.

[61] Whether "loot boxes" are or should be regulated as gambling is beyond the scope of this article. *See generally* J. E. R. Staddon and D. T. Cerutti, *Operant Conditioning*, 54 ANN. REV. PSYCHOL. 115–144 (2003) (defining operant conditioning as the study of reversible behavior maintained by reinforcement schedules); Daniel Vu, *An Analysis of Operant Conditioning and its Relationship with Video Game Addiction*, ART 108: INTRODUCTION TO GAMES STUDIES. 2 (2017) ("[O]perant conditioning's main claim is that the correlation between the numbers of times an action is executed is dependent on if that action is rewarded or punished."); Kevin Liu, *A Global Analysis into Loot Boxes: Is It "Virtually" Gambling?*, 28 WASH. INT'L LAW REV. 3, 773 (2019) (citing Kendra Cherry, *Variable-Ratio Schedules Characteristics*, VERYWELL MIND (Mar. 2, 2018), https://www.verywellmind.com/what-is-a-variable-ratio-schedule-2796012 ("Variable rate reinforcement is a psychological practice where a response is reinforced after fluctuating intermittent outcomes.")).

[62] *See* Samantha Hissong, *Kings of Leon Will Be the First Band to Release an Album as an NFT,* ROLLING STONE (Mar. 3, 2021), https://www.rollingstone.com/pro/news/kings-of-leon-when-you-see-yourself-album-nft-crypto-1135192/ ("[S]treaming's subscription-based pro rata model irreparably hurts artists, and NFTs will make modern fans want to own music again[.]").

[63] *Id.*

[64] *Id.*

The marketplace for digital sound recordings has rapidly embraced this nascent DRM technology. The technology addresses long standing Congressional concerns about digital file sharing technologies destroying disincentives to commercial music piracy. But what exactly is the consumer actually purchasing from the copyright owner?

III. NFT-TETHERED SOUND RECORDINGS AND THE COPYRIGHT ACT

Section 102(a)(7) of the Copyright Act extends copyright protection to: "original works of authorship fixed in any tangible medium of expression, now known or later developed, from which they can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device . . . includ[ing] . . . sound recordings."[65] Traditional 102 analysis applies to any digital sound recording tethered to an NFT.[66] If the sound recording satisfies Section 102, then copyright vests in the work with the authorship of the sound recording—not upon minting of the NFT and regardless of whether an NFT is even utilized, as NFTs do not create copyrights.[67]

Subject to the limitations of Sections 107 through 122 of the Copyright Act, a copyright owner enjoys six statutory rights under Section 106.[68] While Section 106(1) grants the Copyright owner the exclusive right to make reproductions of the work, not all downstream reproductions infringe upon that right. These lawful reproductions include: (1) those reproductions necessary for lawful public or private performance; (2) those reproductions necessary for lawful digital distribution; and (3) the technical functionality of NFT tethering as contemplated under the Copyright Act.

A. Lawful Enablement: Reproductions for Use

At a minimum, use of an NFT-tethered sound recording on a local device requires a consumer to either download an ephemeral local copy of the work or stream a digital transmission of the work, with the first act

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[65] Whether an NFT is original under Section 102 is beyond the scope of this Article. *See* 17 U.S.C. § 102 (1990).

[66] *Id.*

[67] *See* 17 U.S.C. § 201 (1978); *see also* Jeremy Goldman, *A Primer on NFTs and Intellectual Property*, LEXOLOGY (Mar. 11, 2021), https://www.lexology.com/library/detail.aspx?g=D96ed012-8789-4e87-bc1d-70ba76569c0f (explaining that the author initially owns the copyright in the underlying asset unless they transfer the ownership of their copyright to another individual).

[68] 17 U.S.C. § 106 (2002).

covered under Section 106(1) and the latter covered under Section 106(6), if performed publicly.[69] These reproductions are ancillary and unrelated to acts of reproduction necessary to exploit the distribution right under Section 106(3).

There is, of course, nothing that technologically limits an NFT to service as a general form of DRM. A copyright owner could sell an NFT of a sound recording conditioned on use in the owner's music software program. An encrypted digital file could be loaded to the user's device and require a check-in with the NFT ledger to confirm ongoing ownership of the file before authorizing performance of the work.

For the vast majority of NFT-tethered sound recordings, the copyright owner links the NFT to a digital file stored on a third-party's hard drive.[70] Stored on the copyright owner's hard drive, on a cloud service, or on-chain, the NFT serves as an access and copy prevention control to the specifically identifiable work, allowing the NFT owner to call and stream the file ephemerally to a local computer on an authorized basis.[71] Without this technological enablement, there will be no way to lawfully use the sound recording.[72] Any copying necessary to facilitate the use of the lawfully acquired sound recording is excusable, as these activities further the immediate market objectives of the copyright owner in a manner that does not compete with or diminish the value of the first sale of the copyright owner's other offerings.[73]

Section 117 provides additional safeguards for authorized use by consumers. Section 117(1) states that it is not copyright infringement for the "owner of a copy of a computer program to make or authorize the making of another copy or adaptation of that computer program" if that copy or adap-

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[69] *See generally,* 2 Nimmer on Copyright § 8.13[A].

[70] Whichever hard drive is used is ultimately immaterial, as all would be treated as a phonorecord under Section 101 of the Act. *See* 17 U.S.C. 101 (2010).

[71] While generally not seen in practice, a properly licensed NFT *could* permit access to the sound recording through a post on a public social media platform or website, allowing the NFT owner to authorize others to publicly perform the work without the NFT owner engaging in a literal transmission of the work.

[72] *See* 2 Nimmer on Copyright § 8.13 n. 26 ("Although it is certainly the case that the first sale doctrine does not privilege reproduction of copyrighted works, the instant question is whether the technology actually *distributes* the affected copy rather than reproducing it.").

[73] *See* Capitol Recs., LLC v. ReDigi Inc., 910 F.3d at 649, 658 (2d Cir. 2018) (stating that "[t]he production of innocuous, unauthorized reproductions through the unavoidable function of a computer, when done for purposes that do not involve competing with the rights holder in its exclusive market, is outside the scope of this dispute.").

tation is essential to using or executing the computer program.[74] For the sound recording to function as a sound recording, at least a localized copy of the work must be temporarily created on the purchaser's device.[75] Additionally, many NFTs license a right to engage in public performances or displays of the work.[76] Enabled by Section 117, many NFTs provide technological access and rights control measures sufficient to afford the consumer a way to engage in lawful public displays or performances of the work under Sections 106(4) and (5).

B. Lawful Enablement: Reproductions for Distribution

Together, Sections 106(1) and (3) create the exclusive rights for the copyright owner "to reproduce the copyrighted work in copies or phonorecords" and "to distribute copies or phonorecords of the copyrighted work to the public by sale or other transfer of ownership, or by rental, lease, or lending."[77] During the years leading up to the enactment of the 1976 Act, Congress modified the proposed language in the then pending 1976 omnibus revision, relabeling the previous "publication" right as "distribution," expanding the scope of the original Act.[78] From 1971 to 1976, after the enactment of the Sound Recording Act, the "right to distribute" applied solely to sound recordings.[79] In 1976, the current form of Section 106(3) was enacted. While the Copyright Act does not define distribution, the Supreme Court has interpreted the distribution right in the 1976 Act as

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[74] 17 U.S.C. § 117 (1998).

[75] If Congress had not rejected CONTU's proposal for amending the placeholder version of Section 117 and left in "possessor" rather than "owner," NFTs would fail to function as a DRM system, as the owner of an NFT based on non-localized access controls is not in possession of the underlying digital file. In the common use cases, the possessor of the tethered file is the owner of the hard drive serving as the phonorecord. The NFT owner merely has a right to execute a performance of the NFT contingent on the licensing terms of the NFT but no way to make lawful reproductions unless separately granted on a limited basis from the copyright owner.

[76] *See* Richard Lawler, *Twitter brings NFTs to the timeline as hexagon-shaped profile pictures*, THE VERGE (Jan. 21, 2022), https://www.theverge.com/2022/1/20/22893502/nft-twitter-profile-picture-crypto-wallet-opensea-coinbase-right-click (explaining the launch of Twitter's NFT-tethered profile pictures).

[77] 17 U.S.C. § 106 (1), (3) (2002).

[78] 2 Nimmer § 8.11[A] (The drafters of the current Act wished to avoid the tremendous accumulation of common law interpretation that had thus arisen over how to define "publication.").

[79] 2 Nimmer § 8.11[B][3] (citing 17 U.S.C. § 1(f) (1909), as added by Act of Oct. 15, 1971, 85 Stat. 391).

analogous to the older publication right, requiring consideration of the evolving frameworks of the 1790, 1909, and 1976 Acts.[80]

1. Early Cases

While copyright has been called the daughter of the printing press,[81] the grandchildren of this reproduction technology have required expansions in the scope of copyright protection.[82] This expansion is inseparable from the invention and commercial adoption of new reproduction and distribution technologies, particularly in the case of sound recordings.[83] As new modes of technological reproduction are introduced, the barriers to entering the marketplace for reproductions are lowered, creating greater economic incentives to engage in piracy. The development of sound recording technologies evidences these economic pressures, in that lower transaction costs led to growing distributions of pirated works.

Originally, music compositions were protected as "books" under the 1790 version of the Act.[84] Sound recordings would not be invented for another century. In 1877, Thomas Edison's mechanical phonograph cylinder brought a new mode of reproduction and distribution of sound to the public.[85] Gradual improvements enhanced the durability and performance of the devices. Edison's early devices used tin foil spread over cardboard to record sound waves.[86] Alexander Graham Bell's improvements—the use of wax and the change to flat discs—enabled Emile Berliner's 1887 invention of the

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[80] *See* Harper & Row, Publrs v. Nation Enters, 471 U.S. 539, 552 (1985).

[81] 1 Nimmer on Copyright § 2A.02 (quoting Bernard Lang, *Orphan Works and the Google Book Search Settlement: An International Perspective*, 55 N.Y.L. SCH. L. REV. 111, 154 (2011)).

[82] *See* House Report No. 94-1476.

[83] *Id.*

[84] 1 Nimmer on Copyright § 2.05[A][1][a]; *see* 1 Stat. 124, 1 (protecting "any map, chart, book or books"); Musical compositions were expressly added in a 1831 amendment to the 1790 Act; Burrow-Giles Lithographic Co. v. Sarony, 111 U.S. 53, 57 (1884).

[85] *See* Library of Congress, *Inventing Entertainment: The Early Motion Pictures and Sound Recordings of the Edison Companies*, LIBRARY OF CONGRESS, https://www.loc.gov/collections/edison-company-motion-pictures-and-sound-recordings/articles-and-essays/history-of-edison-sound-recordings/history-of-the-cylinder-phonograph/ (last visited Aug. 29, 2022).

[86] *See Id.*; *see also* ThoughtCo., *Edison's Invention of the Phonograph*, THOUGHTCO., https://www.thoughtco.com/invention-of-the-phonograph-4156528 (last visited Nov. 1, 2022) (explaining how Edison's early cylinders only could store "about two minutes of music. But as the technology was improved, a great variety of selections could be recorded.").

gramophone.[87] Mass production of phonorecords came in 1895, and record players dominated commercial markets until the invention of the cassette player in the early 1980s.[88]

An automated performance device, the piano-roll player, entered the market in the early 1890s, leading to the Supreme Court's decision in *White-Smith Music Publishing Co. v. Apollo Co.*[89] In *White-Smith*, the alleged infringer was accused of copying sheet music compositions and imprinting them onto perforated paper piano rolls.[90] The rolls would allow a specially designed piano to autonomously perform the music composition without a human performer.[91] The music rolls were made of perforated sheets that used pneumatics to sound the notes on the piano.[92] The rolls were constructed in one of three ways, by: (1) transcribing the music compositions directly to the roll, (2) copying existing rolls, or (3) using an automatized recording device to capture a live performance.[93] In a technological sense, these early piano rolls, as a type of punch card technology, were a rudimentary computer software—a set of instructions for a machine to interpret and perform or display to a user.

In *White-Smith*, however, the Court held that the piano transcriptions were not an infringement of the underlying music compositions—they were not a "copy" of the original work—as the Copyright Act at the time required the infringing work to be readable by "those skilled in the art . . . by reading, in playing or singing, definite impressions of the melody."[94] The Court read the writing requirement to mean "a written or printed record of it in intelligible notation[,]" foreclosing protection to works that required the use of a machine or device to interpret the copy, thereby barring musical compositions (and, through *dictum*, any other works) that were not *visually* perceptible without the aid of a machine.[95] This interpretation, in turn, meant that a music performer could not produce two copies of a sound re-

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[87] *Id.*

[88] *Id.*

[89] *See* White-Smith Music Pub. Co. v. Apollo Co., 209 U.S. 1 (1908).

[90] *Id.*

[91] *Id.* at 13 (explaining how "[c]onveying no meaning, then, to the eye of even an expert musician and wholly incapable of use save in and as a part of a machine specially adapted to make them give up the records which they contain, these prepared waxed cylinders can neither substitute the copyrighted sheets of music nor serve any purpose which is within their scope").

[92] *Id.* at 10.

[93] *Id.*

[94] *White-Smith*, 209 U.S. at 18 (citing § 4952 (U.S. Comp. Stat. Supp. 1907, p. 1021)).

[95] *Id.* at 17.

cording of a music composition for deposit with the Copyright Office, as "mechanical reproductions were not. . . 'copies'" under the Act.[96]

Congress responded to *White-Smith* with the Copyright Act of 1909, which eased the human perception requirement to "fixation in a tangible medium . . . that is perceptible either directly or with the aid of a machine or device" and the creation of the compulsory music licensing scheme.[97] Thus, the 1909 House Report recognized that the distinction between sound recordings and musical compositions was no longer a theoretical question.[98] Congress did not, however, add sound recordings as a protectable category of works at the time, and the legislative history shows congressional attention was focused solely on amending section 1(e) to overturn *White-Smith's* visual perception requirement.[99] The 1976 Act later added that this medium may be one "now known or later developed" to avoid the artificial medium distinctions drawn from cases like *White-Smith*.[100]

The majority's dictum and Judge Learned Hand's dissent in the 1955 decision *Capitol Records v. Mercury Records Corp.* were the first judicial suggestions that sound recordings, though not visually perceptible, nor literally a "writing," were separate constitutional 'writings' from musical compositions under the Progress Clause.[101] In *Mercury Records*, the Court reviewed a German company's grant of a limited license to make and vend phonographic records in Czechoslovakia.[102] The defendant made and vended the same records in the United States. Relying on *White-Smith*, the Court in *Mercury Records* held that, while Congress had the power under the Progress Clause to extend protection to sound recordings, it had not done so under the 1909 amendment to the Copyright Act.[103] The Court went on to note that "[n]othing in the Act indicates an intention that the record shall be the

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[96] Capitol Recs. v. Mercury Recs. Corp., 221 F.2d 657, 660 (2d Cir. 1955).

[97] 17 U.S.C. § 5 (1909).

[98] *See* Rep., No. 2222, 60th Cong., 2d Sess. 10

[99] *See Mercury Recs. Corp.*, 221 F.2d at 654 (J. Hand, dissenting) (arguing that Congress did not intend the 1909 Act to include sound recordings) (quoting H.R. Rep., No. 2222, 60th Cong., 2d Sess. 10).

[100] 8 Nimmer on Copyright [51] Section 102 (2022).

[101] 1 Nimmer on Copyright § 1.08[B][2].

[102] *See generally*, *Mercury Recs. Corp.*, 221 F.2d at 647.

[103] *Id.* at 659. Notably, Judge Learned Hand broadly construed the scope of an author's writings under the 1909 Act in the earlier 1921 District Court decision. *See* Reiss v. National Quotation Bureau, 276 F. 717, 719 (S.D.N.Y. 1921) (holding the Progress Clause includes the known and unknown); *see also* The House Report 1 on the Copyright Act of 1909 (citing Burrow-Giles Lithographic Company v. Sarony, 111 U.S. 53 ("Congress and the courts have always given a liberal construction to the word 'writings.'")).

'copyrighted work.'" As a result, Congress did not include sound recordings in the 1909 Act, rejecting it in favor of a compulsory license.[104]

2. Digital Distribution

By the 1960s, inexpensive, easy-to-transport tape-recording equipment became commercially available, creating piracy concerns for copyright owners. With the new ease of private reproduction, the music industry began pressuring Congress to revise the Copyright Act to deal with increased music piracy.[105] In 1961, the Register of Copyrights first recommended that sound recordings "be protected against unauthorized duplication under copyright principles."[106] Yet, the Copyright Act remained unchanged until 1971, when Congress enacted the Sound Recording Act, adding sound recordings as a protectable class of works under the 1909 version of the Copyright Act.[107] While the House Report to the Sound Recording Act of 1971 concluded that "sound recordings are clearly within the scope of the 'writings of an author' capable of protection under the Constitution,"[108] the distinction between copies and phonorecords remains preserved under both the 1971 amendments and the present version of Section § 101.[109]

Parallel to rapid changes in the music industry, rapid advances in computing technologies in the 1960s led to similar concerns in the digital space. The first deposit of a computer program with the Copyright Office occurred on November 30, 1961.[110] By 1967, as Congress was considering updating the 1909 Act in response to sound recording reproduction technologies, "it was apparent that the copyright problems raised by computer uses had not been dealt with directly in the bills then before the House of Representa-

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[104] *See* John E. Mason, Jr. *Sound Recordings Protection*, 59 CAL. L. REV. 549 (1971).

[105] Patry, *Copyright Law and Practice*, 74 (2000) http://digital-law-online.info/patry/patry7.html#sec6.21.

[106] *Copyright law Revision Part 1: Report of the Register of Copyrights on the General Revision of the U.S. copyright law,* Before the H. Comm. on the Judiciary. 87th Cong., 18 (Comm. Print, 1961).

[107] *See* 1 Nimmer on Copyright § 1.08[B]2].

[108] H. R., p. 56. See H.R. Rep. No. 92-487, 92d Cong., 1st Sess. 5 (1971); S. Rep. No. 92-72, 92d Cong., 1st Sess. 4 (1971).

[109] *See* 17 U.S.C. § 101 (2010).

[110] *See* Lee A. Hollaar, *Chapter 2: Copyright of Computer Programs*, LEGAL PROTECTION OF DIGITAL INFORMATION, http://digital-law-online.info/lpdi1.0/treatise17.html (last visited Aug. 29, 2022) (noting the first deposit of a computer registration in the section entitled "I.B. The First Software Copyrights.").

tives and the Senate."[111] However, Congress was concerned that an adequate study of computers and copyright law would delay the enactment of other urgently needed revisions, including the Sound Recording Act.[112] On December 31, 1974, Congress established the national Commission on New Technological Uses of Copyrighted Works ("CONTU") with the enactment of Public Law 93-573.[113] CONTU met between 1975 and 1978 to "assist the President and Congress in developing a national policy for both protecting the rights of copyright owners and ensuring public access to copyrighted works when they are used in computer and machine duplication systems[.]"[114] While CONTU prepared its report, Congress modernized several sections of the 1976 Act to include computers, including the definition of computer programs and the inclusion of several computer related storage devices within the definition of "literary works" under Section 101 of the Act.[115] Congress also put a placeholder into Section 117 pending CONTU's final report.[116]

CONTU's report came on July 31, 1978 and noted that "placement of any copyright work into a computer is the preparation of a copy and, therefore, a potential infringement of copyright."[117] However, unlike the modern approach, CONTU did not view the loading of a lawfully possessed program into a computer as impacting the reproduction right, but rather, the right to create a derivative under Section 106 (2), analogizing the conversion of the program as a "translation, transformation, and adaptation of the work."[118] CONTU recommended that Section 117 be amended to cover possessors of copyrighted computer programs making copies necessary to execute the program.[119] Congress adopted CONTU's recommendations, changing only the word "possessor" to "owner" in Section 117 without comment.

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[111] *See* CONTU at 3 Report citing 90th Cong., 1st sess., 1967 H.R. 2512; 90th Cong., 1st sess., 1967 S. 597.

[112] *See* CONTU at 3.

[113] Public Law 93-573 (1974).

[114] CONTU at 3. The Commission also studied photocopying technologies at this time.

[115] *See* 17 U.S.C. § 101 (2010). One could argue that, without the material objects savings clause, some advanced storage devices, like solid state drives or quantum computers, would fall outside the definition of "film, tapes, disks, or cards." The House Report does include "computer databases" despite omitting it from Section 101 as enacted. *See* H.R. Rep. No. 94-1476 at 54 (1976).

[116] *See* Hollaar, *supra* note 110 (explaining that the Copyright Act of 1976 clearly reflected Congressional intent to add computer software to the scope of the Act).

[117] CONTU at 12.

[118] *Id.*

[119] *See* Hollaar, *supra* note 110.

This change to Section 117 has unintended consequences for NFT technologies. If Congress had left "possessor," rather than "owner," in Section 117, someone who had stolen the credentials to an NFT could have taken shelter in Section 117 for the making of unlawful copies.[120] While ownership presumes lawful acquisition, possession does not.[121] The high-profile NFT theft involving Seth Green's Bored Ape and his plans to make derivative works under Section 106(2) demonstrates this difference. If CONTU's version of Section 117 had been enacted, Section 117 would have been in immediate conflict with the writing requirement for transference of a copyright owner's rights under Section 204 of the Act.[122]

Regardless, the 1965 Supplemental Report statement of legislative purpose to the then-pending 1976 omnibus revision was, as Nimmer calls it, "remarkable."[123] The drafters of the 1976 Act were keenly aware that "no one can foresee accurately and in detail the evolving patterns in the ways [an] author's work will reach the public 10, 20 or 70 years from now."[124] To Congress, it was "becoming increasingly apparent that the transmission of works by . . . linked computers, and other new media of communication may soon be among the most important means of disseminating them[.]"[125] Looking toward a future of linked computer network file sharing, Congress foresaw non-profit distribution of works coming into direct conflict with the incentive theory grounding the whole of American copyright law.[126] Fifty years later, non-profit distribution of sound recordings caught the public's attention in the high-profile music file sharing cases.

3. The Peer-to-Peer File Sharing Cases

In the seminal *Napster* file-sharing case, the Ninth Circuit held that "Napster users who upload file names to the search index for others to copy violate plaintiffs' distribution rights[,]" deciding that "making available" a file was a sufficient act of distribution to violate Section 106(3), prior to any

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[120] *See* 17 U.S.C. § 117 (1998).

[121] *Id.*

[122] *See* Lorenzo Franceschi-Bicchierai, *Seth Green NFT Theft Part of Multimillion-Dollar Scam Campaign, Investigator Says,* VICE (July 12, 2022), https://www.vice.com/en/article/jgp8kd/seth-green-nft-theft-part-of-multi-million-dollar-scam-campaign-investigator-says [https://perma.cc/QH69-67P5].

[123] 2 Melville Nimmer, *Nimmer on Copyright* § 8.11 at 17 (1978).

[124] *Id.* at 16 (quoting Reg. Supp. Rep., p. 13).

[125] *Id.*

[126] *Id.* at 17.

act of unlawful reproduction.[127] Napster's platform hosted a peer-to-peer network architecture that allowed users to share files with one another.[128] Each uploaded file would have a name and some associated metadata indexed in the Napster search engine.[129] Napster did not make direct reproductions nor make the reproductions available; Napster facilitated distribution of the user's reproductions by making them available to users through its centrally stored file indexing program.[130]

In further proceedings in the district court, the Northern District of California looked to the Supreme Court's previous decision in *Harper & Row* for further guidance on the plaintiff's distribution claims.[131] The Court observed that while Section 101 lacked an express definition of "distribution[,]" the Supreme Court had interpreted Congress' equation of the distribution right with the publication right. Publication is defined, in pertinent part, as:

> the distribution of copies or phonorecords of a work to the public by sale or other transfer of ownership, or by rental, lease, or lending. The *offering* to distribute copies or phonorecords to a group of persons for purposes of further distribution, public performance, or public display, constitutes publication[.][132]

The first clause requires actual distribution, the second contemplates an offer of distribution.[133]

In the aftermath of *Napster*, a number of companies shifted to a decentralized index for their peer-to-peer file sharing network, hoping to find safe harbor under the *Sony* staple articles doctrine, a defense ultimately rejected by the Supreme Court in the *Grokster* case.[134] The next decade and a half saw two changes in file sharing litigation: the rejection by some courts of the

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[127] A&M Inc. v. Napster Inc., 239 F.3d 1004, 1014 (9th Cir. 2001).

[128] *Id.* at 1011.

[129] *See id.*

[130] *See id.*

[131] *See id.*

[132] 17 U.S.C. § 101 (2010) (emphasis added).

[133] 2 Melville Nimmer, *Nimmer on Copyright* § 8.11 (1978). In the later *Perfect 10 v. Google Inc.,* the Ninth Circuit confusingly stated that "the distribution right required an actual distribution of a copy. . ." but "merely making images available" where an owner of the work has already made the available copies of the work already." *Id.*

[134] *See* MGM Studios, Inc. v. Grokster, Ltd., 259 F. Supp. 2d 1029, 1040 (C.D. Ca. 2003) (explaining the spokes-and-hub Grokster and "true" decentralized Gnutella file sharing networks); *id.* at 1036 (holding *Sony* defense not available where putative defendant has actual knowledge of infringement).

"making available" reading of the distribution right, and the music industry's campaign against individual file sharing.[135] The courts remain divided on this issue.[136] *London-Sire Records, Inc. v. Doe 1*, for example, rejects the "making available" doctrine found in *Napster*.[137] Nimmer notes that the distinction has more academic than practical import, at least inasmuch as tethering technologies remained in an unsophisticated state until around 2018.[138]

In *London-Sire*, the Massachusetts District Court did not view the materiality of a phonorecord in a literal sense, unlike the courts adopting the "making available" doctrine.[139] Instead, the Court broadly construed "fixation" and "phonorecord," holding that the reproduction of a sound recording in a digital file resulted in the creation of a new material object.[140] As the Court noted, "[w]hat matters in the marketplace is not whether a material object 'changes hands,' but whether, when the transaction is completed, the distributee has a material object."[141] This reading of the Copyright Act presupposes the state of reproduction and DRM technology as it existed in the early to mid-part of the 2000s.

One company sought to create a lawful digital resale marketplace through application of the first sale doctrine and a (then) novel DRM system. In 2009, ReDigi, Inc. launched its digital sound recording resale marketplace, where consumers could buy and resell lawfully purchased music files from iTunes.[142] ReDigi was founded "with the goal of creating enabling technology and providing a marketplace for the lawful resale of law-

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[135] 2 Melville Nimmer, *Nimmer on Copyright* § 8.11 (1978). Individual user litigation is outside the scope of this article.

[136] *Compare Hotaling v. Church of Jesus Christ of Latter-Day Saints*, 118 F.3d 199 (4th Cir. 1997) (holding that making copyrighted material available is sufficient to constitute a distribution), *and Arista Records LLC v. Greubel*, 453 F.Supp. 2d 961, 969-70 (N.D. Tex. 2006) (citing and following *Hotaling*), *and Warner Bros. Records, Inc. v. Payne*, No. W-06-CA-051, 2006 U.S. Dist. LEXIS 65765, 2006 WL 2844415, at *3-*4 (W.D. Tex. July 17, 2006) (same), *with In re Napster, Inc. Copyright Litig.*, 377 F. Supp. 2d 796, 802-05 (N.D. Cal. 2005) (criticizing *Hotaling* as being "contrary to the weight of [other] authorities" and "inconsistent with the text and legislative history of the Copyright Act of 1976"), *and Nat'l Car Rental Sys., Inc.*, 991 F.2d at 434, (8th Cir. 1993) (stating that infringement of the distribution right requires the *actual* dissemination of copies or phonorecords).

[137] *See* 542 F. Supp. 2d at 166–67.

[138] 2 Melville Nimmer, *Nimmer on Copyright* § 8.11 at 46 (1978).

[139] *See* 542 F. Supp. 2d at 170.

[140] *See id.*

[141] *Id.* at 174.

[142] *ReDigi Inc.*, 910 F.3d at 649.

fully purchased digital music files from the iTunes store."[143] ReDigi required its users to download a DRM program called the "Music Manager."[144] Once downloaded, the Music Manager would identify lawfully purchased iTunes music and check for modification.[145] If eligible, the program would mark it available for resale on ReDigi's resale platform.[146]

The ReDigi user then had the option to migrate that file to ReDigi's remote "Cloud Locker."[147] The Cloud Locker was a hard drive owned, controlled, and operated by ReDigi.[148] Normally, transferring a digital file creates a perfect reproduction of the file on the receiving hard drive.[149] ReDigi's Music Manager purported to delete the origin file from the user's hard drive in the process of transferring it to the Cloud Locker.[150] To send a digital file, a user's computer would break that file into smaller "packets" for transmission over the internet.[151] ReDigi's program would delete each of those packets as they were transmitted to the Cloud Locker.[152] Users could continue streaming files loaded into the Cloud Locker until resold on the ReDigi marketplace.[153]

The ReDigi marketplace allowed users to search for previously uploaded sound recordings.[154] Upon resale, a purchaser could choose to leave the file in the Cloud Locker, or to download the file to their own computer.[155] If a purchaser downloaded the file to a personal computer, it would be deleted from the Cloud Locker.[156] Acting in good faith, ReDigi tried to use the DRM functionality of its Music Manager and Cloud Locker system to police against unlawful reproductions of the lawfully acquired sound recording.[157] By preventing users from retaining a copy of an uploaded file, and by deleting the sound recording file upon resale and download to a

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[143] *Id.* at 652.
[144] *Id.* at 652-53.
[145] *Id.*
[146] *Id.* at 653.
[147] *ReDigi Inc.*, 910 F.3d at 653.
[148] *Id.*
[149] *Id.* at 662 (stating how "[t]he digital files resold by ReDigi, although used, do not deteriorate the way printed books and physical records deteriorate.").
[150] *Id.* at 653-54.
[151] *Id.*
[152] *ReDigi Inc.*, 910 F.3d at 654.
[153] *Id.*
[154] *Id.*
[155] *Id.*
[156] *Id.*
[157] *ReDigi Inc.*, 910 F.3d at 654. Notably, ReDigi's 1.0 system did not stop users from retaining duplicates on other devices that the Music Manager was not installed on.

purchaser's computer, ReDigi believed it had created a lawful resale marketplace in a manner that advanced the policy goals of copyright law.[158] But the Second Circuit ultimately ruled that ReDigi's actions violated Section 106(1), rejecting ReDigi's first sale defense as inapplicable to violations of a copyright owner's reproduction right.[159]

ReDigi raised two arguments in support of its first sale defense. First, ReDigi argued that the Music Manager system resulted in the distribution of a *particular* digital file.[160] Likening a particularly identifiable digital sound recording to a material object, ReDigi argued that the digital music files qualified as phonorecords under Section 101.[161] ReDigi believed that if the digital file were a phonorecord, then Section 109 would apply and provide a defense to Capitol Records' infringement claims. Recognizing that "[the Court's] understanding of the technology was limited," the Second Circuit ruled narrowly, holding that the system still created an unlawful reproduction of the file, even if the digital file itself constituted a phonorecord.[162]

Second, ReDigi argued that its DRM system did not result in a reproduction as it "'causes [packets] to be removed from the file . . . remaining in the consumer's computer' as those packets are copied into the computer buffer and then transferred to the ReDigi server."[163] The Second Circuit held that this did not "rebut or nullify the fact that the eventual receipt and storage of that file in ReDigi's server, as well as in the new purchaser's device . . . does involve the making of new phonorecords."[164] So, "[u]nless the creation of those new phonorecords is justified by the doctrine of fair use

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[158] *Id.* at 652 n.3 ("[ReDigi] invented a system designed in good faith to achieve a goal generally favored by the law of copyright, reasonably hoping the system would secure court approval as conforming to the demands of the Copyright Act.").

[159] *Id.* at 656 ("[I]n the course of ReDigi's transfer, the phonorecord has been reproduced in a manner that violates the Plaintiffs' exclusive control of reproduction under § 106(1)." (emphasis omitted)).

[160] *Id.* ("ReDigi emphasizes that its system simultaneously "causes [packets] to be removed from the. . .file remaining in the consumer's computer" as those packets are copied into the computer buffer and then transferred to the ReDigi server, Appellants Br. 24, so that the complete file never exists in more than one place at the same time.").

[161] *Id.* The Second Circuit declined to rule on this argument, as the system still resulted in an unlawful reproduction regardless of whether the digital file was a material object. *But see* London-Sire Recs., Inc., 542 F. Supp. 2d at 170 (stating that "[i]t makes no difference that the distribution occurs electronically, or that the items are electronic sequences of data rather than physical objects.").

[162] *ReDigi Inc.*, 910 F.3d at 656 n.10.

[163] *Id.* at 656.

[164] *Id.* at 657.

. . . the creation of such new phonorecords involves unauthorized reproduction."[165]

The Second Circuit's narrow focus on the reproduction right, rather than the distribution right, avoided application of the "making available" doctrine in the distribution context. It also did not address the 1995 amendments to Section 115 to encompass the distribution of nondramatic musical compositions.[166] NFTs, being the first sophisticated tethering technology, bring practical import to this narrow issue of statutory interpretation.[167]

C. DRM Tethering

Section 202 makes clear that ownership of the material object in which a lawful copy is fixed is distinct from ownership of the copyright.[168] Section 109 provides the most important limitation on the copyright owner's distribution right, stating that "the owner of a particular copy or phonorecord lawfully made under this title, or any person authorized by such owner, is entitled, without the authority of the copyright owner, to sell or otherwise dispose of the possession of that copy or phonorecord."[169] As a result, a consumer does not commit copyright infringement when they resell an iPhone or other electronic device onto which they have downloaded music without first erasing the downloaded songs.[170] The first sale doctrine exhausts the copyright owner's rights to control the resale of a phonorecord once they have made the initial sale of the fixed work.[171] For a time, it was

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[165] *Id.*

[166] 4 Patry on Copyright § 13:23 at 2.

[167] *See infra,* Section IV.

[168] 4 Patry on Copyright § 13:15 at 3 (permitting video store to rent or sell lawfully purchased copies of audiovisual works (citing Columbia Pictures Indus., Inc. v. Redd Horne, Inc., 749 F.2d 154, 159 (3d Cir. 1984))); Sturgis v. Target Corp., 630 F.Supp.2d 776, 778-779 (E.D. Mich. 2009).

[169] 17 U.S.C. § 109 (2008).

[170] Characterizing the resale of a device fixed with a sound recording purchased on iTunes as *per se* lawful resale is misleading. Such conduct is not copyright infringement, but it violates the iTunes terms of use. *See* Apple, *Apple Media Services Terms and Conditions*, https://www.apple.com/legal/internet-services/itunes/us/terms.html (last visited Aug. 26, 2022) (noting the scope of license in § G (a), by specifically stating, "[y]ou may not transfer, redistribute or sublicense the Licensed Application except as expressly permitted in this Agreement and, if you sell your Apple Device to a third party, you must remove the Licensed Application from the Apple Device before doing so.").

[171] Robert Rotstein, *The First Sale Doctrine in the Digital Age*, INTELL. PROP. & TECH. L. J. (Mar. 2010), https://www.msk.com/newsroom-publications-1114 (ex-

unsettled whether the codification of the first sale doctrine in Section 109 should extend to digital files.

In 2001, the Copyright Office issued its Digital Millennium Copyright Act Section 104 report ("the Report").[172] Largely on economic grounds, the Report opposed enlargement of the first sale doctrine to encompass digital resale.[173] Noting the physical degradation of physical objects, the Report found that the nonrivalrousness of digital files made them perfect substitutes for the digital works originally distributed by a putative copyright owner.[174] These transmissions affect the marketability for original digital files in such a way that it undermines the public policy goal of promoting the creation of works of expression.[175]

Further, the Report evaluated DRM technologies that existed in that particular time period.[176] The Report found that "unless a "forward-and-delete" technology is employed to automatically delete the sender's copy, the deletion of a work requires an additional affirmative act on the part of the sender subsequent to the transmission." Due to evidentiary concerns, it would be impossible to know for certain whether a consumer had in fact actually deleted the purchased original file without making additional reproductions of the work, lawful or unlawful.[177] It was impossible to say for sure, in 2001, that the market would ever develop or embrace a DRM technology that solved this evidentiary concern.[178]

ReDigi tried to lawfully solve this identified market failure with a technological measure.[179] But regardless of intent, the ReDigi system effectuated an unlawful transmission of the digital sound recordings through the unique Media Manager DRM system in a manner that created unlawful reproductions.[180] Conversely, a sufficiently sophisticated DRM system that fa-

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plaining how the first sale doctrine "rest[s] on the principle that [a] copyright is entitled to realize the full value of each copy or phonorecord upon its disposition.").

[172] *See* Report of the Register of Copyrights Pursuant to § 104 of the Digital Millennium Copyright Act xviii-xxi, 19-40, 78-105 (August 2001) ("the DMCA Report").

[173] *Id.*

[174] *Id.*

[175] *Id.*

[176] *Id.*

[177] *Id.*

[178] The DMCA Report at 19-40; 78-105.

[179] *ReDigi Inc.*, 910 F.3d at 654 n.3. Notably, the district court found that ReDigi's public policy defenses were selfishly motivated. *See Capitol Records, LLC v. ReDigi, Inc.,* 934 F.Supp.2d 640 (S.D.N.Y. 2013), *aff'd,* 910 FL2d 649 (2d Cir. 2018).

[180] *ReDigi Inc.*, 910 F.3d at 664.

cilitates transfer of ownership of the sound recording by tokenizing the consumer's interest in either the phonorecord *or* the digital file would permit lawful transmission of the work *without* an act of reproduction, and would neither create an unlawful reproduction of the work, nor violate the distribution right.[181] And if the digital file was originally created lawfully—either through the direct authorization of the copyright owner, fair use under Section 107, or if excused under Section 1008—then the distribution right would not be infringed through such a DRM system.[182] Stated differently, a DRM system that permits the transfer of ownership of a lawfully created copyrighted digital file (or its material object) *without* a concomitant act of reproduction does not violate the copyright owner's reproduction or distribution right.

Unlike ReDigi's system, which required an act of reproduction to facilitate transmission of the centrally saved sound recording, an NFT-tethered sound recording tethers a nonfungible token appended on a blockchain ledger to a uniquely identifiable digital file saved on a uniquely identifiable phonorecord.[183] The NFT owner does not need to make a copy available or transmit files directly to a purchaser to facilitate resale.[184] The copyright owner's minting of the NFT authorizes and creates a uniquely identifiable copy of that work in an identifiable material object.[185] The tethering aspects of NFTs facilitate a secondary market in which the purchasers of the lawfully created sound recording do not need to engage in any act of reproduction.[186] Rather, resale is consummated through the exchange of ownership of

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[181] *See* The DMCA Report at xix; *see also id.* at 81–91.

[182] *See* 17 U.S.C. §§ 107, 1008 (1992).

[183] *See supra,* Section II.

[184] *See* 2 Nimmer § 8.11 ("It is clear that merely transmitting a sound recording to the public on the airwaves does not constitute a 'distribution'; otherwise, sound recording copyright owners would have the performance rights expressly denied to them under the statute. For this reason, distribution is generally thought to require transmission of a 'material object' in which the sound recording is fixed: a work that is of 'more than transitory duration.'"); *see also* 2 Nimmer § 8.11[C] (distribution right is right to "publicly to sell, give away, rent or lend any material embodiment of copyrighted work" (emphasis omitted)); *see generally,* 17 U.S.C. § 101 (2010) (defining "copy").

[185] *See* Harsch Khandelwal, *Minting, distributing and selling NFTs must involve copyright law*, COINTELEGRAPH (Aug. 22, 2021), https://cointelegraph.com/news/minting-distributing-and-selling-nfts-must-involve-copyright-law (explaining the process of NFT minting, specifically how a copyright owner—"[a] minter—stores a copy of the digital file on a server and then created a blockchain token that contains a link to that file.").

[186] *See* Laura-Michelle Horgan, *Not For the Taking: NFTs and Intellectual Property Rights*, BARTON (Mar. 23, 2022), https://www.bartonesq.com/news-article/not-for-

a tokenized interest in the sound recording or phonorecord (*i.e.* the hard drive).[187] Instead of reproduction as a condition of digital transmission, the parties exchange possession of the access controls tethered to the copyright owner's original fixation of the work in a material object.[188]

Twenty-one years after the DMCA Report, tethering technology has become sophisticated enough to address the original Congressional concerns about file sharing technologies. Now what?

IV. THE FUTURE OF NFT TETHERING

In the Copyright Office's 2001 DMCA Report, the Registrar of Copyrights recognized that "if the practice of tethering were to become widespread, it could have serious consequences for the operation of the first sale doctrine, although the ultimate effect on consumers of such a development remains unclear."[189] The Registrar's predictions about the state of future tethering DRM technologies was off the mark in that it failed to see the potential utility of linking decentralized networking with access and rights management controls, a technological solution that NFTs facilitate.[190] The DMCA Report predicted a technology in which the tethering of the sound recording to the hard drive would prohibit further disposition or alienation of the work, rather than a technology in which the decentralized nature of the network created technological immutability in the phonorecord itself.[191]

An NFT is a tethering DRM system that allows the lawful resale of the storage device without any reproduction of the stored file.[192] Stated differently, the parties to a secondary market transaction exchange the password

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the-taking-nfts-and-intellectual-property-rights/ (using the popular NFT collection–Bored Ape Yacht Club–to illustrate how NFT purchasers do not need to engage in reproduction as an NFTs are tokens that "link to or and point to digital files.").

[187] *Id.*

[188] *See* Desiree Moshayedi, *Does the First Sale Doctrine Apply to NFTs?*, COLUMBIA L. SCH.: THE CLS BLUE SKY BLOG (Jan. 5, 2022), https://clsbluesky.law.columbia.edu/2022/01/05/does-the-first-sale-doctrine-apply-to-nfts/ (noting how most NFT agreements allow for buyers to have the right to resell).

[189] U.S. Copyright Office's Digital Millennium Copyright Act, § 104 Report at 76 (Aug. 29, 2001).

[190] *Id.*

[191] *See id. at 75* ("The only way of accessing the content on another device would be to circumvent the tethering technology, which would violate section 1201.").

[192] *See* James Grimmelmann, Yan Ji & Tyler Kell, *Copyright Vulnerabilities in NFTs*, IC3, https://medium.com/initc3org/copyright-vulnerabilities-in-nfts-317e02d8ae26 (Mar. 21, 2022).

to access the stored file, resulting in a change of ownership, but not possession, of the hard drive containing the stored digital file.[193] This exchange of ownership of a hard drive, rather than a digital file, aligns itself with the views taken in the *London-Sire Records* and *ReDigi* cases.[194] As the DMCA Registrar noted in the 2001 DMCA Report, this new technology has serious implications on the first sale doctrine for consumers. There are three ways to resolve this problem.

A. Do Nothing and Apply Section 115

If Congress resists further extension of the scope of Section 109, prohibiting application of Section 109's first sale doctrine into digital resale, Section 115 *already* covers the resale of lawfully created NFT-tethered sound recordings for private performances.[195] Because the copyright owner authorized the minting of the NFT, Section 115 can control and impute a compulsory license to downstream transactions.[196] Thus, an NFT-tethered sound recording satisfies Section 115(a)(1)(A)(i) as a "musical work. . . previously distributed to the public in the United States under the authority of the copyright owner."[197] Section 115(a)(1)(A)(i) also covers the NFTs function as a means of digital phonorecord delivery.[198] Further, Section 115(a)(1)(A)(i) excludes real time streaming from the scope of the compulsory license, which an NFT, by function of its technology, is not engaged in.[199]

For these reasons, Congress can simply treat the downstream imposition of royalty fees as the equivalent of a mechanical license without having

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[193] *Id.*

[194] *See supra* notes 139–53.

[195] *See* Shapiro, Bernstein & Co. v. Remington Records, Inc., 265 F.2d 263, 267 (2d Cir. 1959) ("Once a copyright owner makes his musical work available to any record manufacturer it becomes subject to the compulsory licensing provisions of the Copyright Act and may be copied by others simply upon their giving notice of intention and thereafter paying the royalty fixed by the statute.").

[196] 17 U.S.C. § 115(a)(1)(A) (1972) ("A person may obtain a compulsory license only if the primary purpose in making phonorecords of the musical work is to distribute them to the public for private use, including by means of digital phonorecord delivery").

[197] *Id.* § 115(a)(1)(A)(i) (1972).

[198] *Id.* (covering individual delivery of phonorecords by digital transmissions of a sound recording, where such delivery results in a specifically identifiable reproduction).

[199] *See supra* Section II.

to resolve the first sale implications of NFTs, should it so choose.[200] Of course, this does not resolve the more difficult digital first sale problem. Notably, Section 115 was amended in 1995 on the theory that digital distributions of musical compositions were equivalent to hard copy distributions.[201] Simply falling back to Section 115 would continue to reward the rent-seeking behavior of the music industry, who "should not be heard to take a contrary view when consumers wish to avail themselves of their section 109 privileges."[202]

Thus, relying on Section 115's mechanical license is a poor prophylactic. Congressional inaction leaves intact an NFT marketplace dominated by unclear rights allocation and disparate bargaining power between the parties. Once a copyright owner mints an NFT, the terms of service almost always include downstream royalty provisions despite the NFT minter and the subsequent purchasers lacking any privity between one another. Absent the protections of first sale doctrine, the marketplace of digital "ownership" that has emerged is both defined and constrained by its technological endorsement of restraints on alienation and algorithmic distrainment.

Several prominent and popular NFTs highlight this problem. Yuga Labs Inc.'s Bored Apes NFT launched in April 2021. Bored Apes are marketed as "[a] limited NFT collection where the token itself doubles as your membership to a swamp club for apes."[203] Each Bored Ape is "unique and programmatically generated from over 170 possible traits, including expression, headwear, clothing, and more."[204] Many have sold on secondary resale markets, like Open Sea, for seven figure sums.[205] Assuming that Bored Ape

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[200] If Congress wishes to extend the compulsory license to other works tethered to NFTs, beyond sound recordings, it must say so, and amend Section 115 accordingly.

[201] Patry on Copyright § 13:23 at 2.

[202] *Id.*

[203] Yuga Labs Inc., *BAYC*, https://boredapeyachtclub.com/#/ [https://perma.cc/2H9T-UA7B] (last visited Oct. 25, 2022).

[204] Watcher.Guru, *What is Bored Ape Yacht Club NFT?*, WATCHER NEWS (Aug. 25, 2021), https://watcher.guru/news/what-is-bored-ape-yacht-club-nft [https://perma.cc/G3H9-HSVX] ("Owning a Bored Ape amounts to much more than owning a provably unique piece of art. You also get the rights for commercial usage of the image."); *see id.*

[205] Renuka Tahelyani, *Top 11 Most Expensive Bored Ape Yacht Club NFTs*, THE CRYPTO TIMES, https://www.cryptotimes.io/most-expensive-bored-ape-yacht-club-nfts/ [https://perma.cc/KXX7-6TWS] (last updated Sept. 21, 2022).

NFTs are copyrightable, is the promise of ownership in an unrecognized property right a legally enforceable one?[206]

The Bored Ape NFT terms of use, like those of many other NFTs, grant conflicting rights to purchasers.[207] Despite using the word "own" and "ownership" and promising to never revoke a purchaser's ownership in a Bored Ape NFT, the terms of use restrain future alienation subject to the purchaser's compliance with the terms of use, and limits permissible exercises of the public display right and reproduction or resale of the NFT to platforms that satisfy certain resale conditions.[208] Furthermore, the lack of privity between the downstream purchaser of a Bored Ape and Yuga Labs raises other issues, as the high-profile theft of Seth Green's Bored Ape highlights.[209] Transference of ownership of an NFT does not, under the Copyright Act, transfer any of a copyright owner's exclusive rights without a signed writing transferring those rights.[210]

The NBA's popular Top Shot NFT is another prominent NFT offering, consisting of a collection of video clips of basketball games.[211] Like BAYC, the NBA offers purchasers ownership of these "moments" as NFTs from "lootboxes" available through the NBA's official Top Shot application.[212] The Top Shot application serves as both an access and a rights portal for the moments and provides a direct secondary marketplace to the consumers of

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[206] *See* Katya Fisher, *Once Upon a Time in NFT: Blockchain, Copyright, and the Right of First Sale Doctrine*, 37 CARDOZO ARTS & ENT. L. J. 629, 632 (2019) (supporting the same concern regarding conflicting rights between NFT creators and NFT purchasers). Whether "ownership" of an NFT equates to ownership in fee simple or fee determinable is beyond the scope of this Article. It is worth noting, however, that to the extent an NFT creates a property interest, rather than a contractual one, a fee determinable interest created through an NFT smart contract raises concerns under property law of dead hand control and under copyright law by extending the copyright term beyond the statutory boundaries found in Section 302 of the Copyright Act.

[207] Watcher.Guru, *supra* note 204.

[208] *Id.*

[209] *See* Lorenzo Franceschi-Bicchierai, *Seth Green NFT Theft Part of Multimillion-Dollar Scam Campaign, Investigator Says*, VICE (July 12, 2022, 2:07 PM), https://www.vice.com/en/article/jgp8kd/seth-green-nft-theft-part-of-multi-million-dollar-scam-campaign-investigator-says [https://perma.cc/P87M-WMDG] (detailing high-profile hack of Seth Green's private NFT collection, and potential legal consequences).

[210] *See* 17 U.S.C. § 204(a) (1976).

[211] NBA TOP SHOT, https://nbatopshot.com [https://perma.cc/7YDB-WGCU] (last visited Oct. 25, 2022).

[212] *See* NBA Top Shot, *Terms of Use*, NBA TOP SHOT (Aug. 12, 2022), https://nbatopshot.com/terms [https://perma.cc/Z4KD-SD5V].

the Top Shot NFT.[213] Despite promising "ownership," the Top Shot terms are more egregious regarding the restraint of alienation and do not provide any of the Section 106 rights, except a limited right to resale of the moments under certain terms.[214]

While Top Shot's terms of use expressly permit resale outside of the NBA's platform, the related Shot Code of Conduct allows the NBA to unilaterally and without notice remove moments from accounts that are "overpriced" or "artificially inflated."[215] The NBA reserves the right to "seize, freeze, or otherwise modify the ownership of any Moment" for violations of the terms of service, including "Category "B" Prohibited Activities," which are left undefined in the terms of use.[216] The terms also give the NBA a number of extra-judicial remedies, raising some procedural due process concerns that are beyond the scope of this paper.

In 2022, Snoop Dogg released *B.O.D.R.* on the Gala Games blockchain platform.[217] Similar to Bored Apes and Top Shot, the Gala Games terms of service offer users ownership rights.[218] Gala disclaims any ability to control NFTs sold on its platform, while simultaneously reserving the right to charge downstream gas fees without notice on future resales.[219] Gala also disclaims any warranties in the sale of NFTs on its platform and reserves the

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[213] *See id.*

[214] *See id.*

[215] *NBA Top Shot Code of Conduct*, NBA TOP SHOT (Jan. 31, 2021, 11:06 AM), https://blog.nbatopshot.com/posts/trade-code-conduct [https://perma.cc/3VWJ-4Q6G]; *see id.*

[216] *See* NBA Top Shot, *supra* note 212.

[217] Vismaya V., *Snoop Dogg's B.O.D.R. NFT Album Released in Collaboration with Gala Games*, THE CRYPTO TIMES, https://www.cryptotimes.io/snoop-doggs-b-o-d-r-nft-album-released-in-collaboration-with-gala-games/ [https://perma.cc/AY22-JNHY] (last updated Feb. 21, 2022).

[218] While *B.O.D.R.* is also available for purchase on the NFT platform OpenSea, OpenSea does not make any promises or warranties about what property rights, if any, are being conveyed in a transaction. *See Snoop Dogg - B.O.D.R.*, OPENSEA, https://opensea.io/collection/snoopdoggbodr [https://perma.cc/DK9W-4Q4C] (last visited Oct. 25, 2022); *see also Terms of Service*, OPENSEA, https://opensea.io/tos/ [https://perma.cc/LG8E-6ESB] (last updated Aug. 2, 2022); *see also* Gala Games, *Terms and Conditions*, GALA GAMES, https://app.gala.games/terms-and-conditions [https://perma.cc/6RMV-VKP5] (last visited Oct. 25, 2022)

[219] *See id.* (stating in the Ownership Restrictions section that "[t]he User *owns* the underlying NFT completely for as long as the User owns the Platform Asset, subject to the terms and restrictions of this Agreement and any accompanying license restrictions for the Platform Asset. Ownership of the NFT is mediated entirely by the smart contract and Ethereum Network (or any other applicable network): at no point may GALA seize, freeze, or otherwise modify the ownership of the Platform Asset.") (emphasis added).

right to lock users out of the purchases and claw back sales if its licensing terms are violated.[220]

There are two ways to treat these conflicting promises to the consumer.[221] The first is to view the promise of "ownership" as puffery, and to imply a forced license between the consumer and the seller of the NFT.[222] Under this approach, Section 115 implies a compulsory license to downstream resale for sound recordings as a limitation on obvious copyright misuse. Adopting an implied licensing model would mean that NFTs have created an environment where consumers are promised that they "own" an artificially scarce digital work without actual ownership.[223] Yet, the potential for resale (and speculation field through artificial scarcity) is what creates the market demand for ownership of this new type of sound recording in the first place.[224] This is different from the garden variety licensing cases in which the consumer is fully on notice that they are not acquiring the full rights to the work they are licensing.[225] Here, consumers are being promised the ability to resell, and, sometimes, to exploit the underlying work of authorship.[226] But the word "ownership" is a term of art with a distinct meaning in law.[227] To own a thing is to take it with all the property rights inherent to that thing. True ownership of an NFT would match the promises (but not the implementation) seen in the Bored Apes NFT: the right to possess it, control it, exclude others from it, exploit it, and dispose

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[220] *Id.*

[221] NBA Top Shot, *supra* note 212.

[222] *C.f.* Orit Afori, *Implied License: An Emerging New Standard in Copyright Law*, 25 SANTA CLARA HIGH TECH. LAW J. 2, 282 ("Under the implied license doctrine, the purchaser of a tangible asset reflecting intellectual property rights has a right to use the asset in a normal and natural manner that may be deduced from the nature of the asset.").

[223] *See* James Grimmelmann et al., *The Tangled Truth About NFTs and Copyright*, THE VERGE (June 8, 2022, 8:30 AM), https://www.theverge.com/23139793/nft-crypto-copyright-ownership-primer-cornell-ic3 [https://perma.cc/5XWE-RH2E] (noting how NFT minters "need to give serious thought to how they structure their terms").

[224] *See id.*

[225] *See AccuZip, Inc. v. Director, Div. of Taxation*, 25 N.J. Tax 158, 176 (N.J. Tax Ct. 2009) (noting how the agreement placed customers on notice that "AccuZIP and Quark are not selling *ownership* of its intellectual property. Rather, the buyer receives ownership of the physical property containing the intellectual property for its own use.") (emphasis added).

[226] *See* Grimmelmann, *supra* note 223.

[227] *See* Arti K. Rai et al., *University Software Ownership and Litigation: A First Examination*, 87 N.C. L. REV. 1519–1570 (2009).

of it.[228] So, if Congress acquiesces to this market behavior without further action, then it should encourage regulatory agencies, like the FTC, to better police and enforce laws concerning false advertising and consumer fraud to reign in obvious cases of copyright misuse.

B. Extend Section 109 to the Tethered Sound Recordings

Alternatively, Congress could adopt the view that NFT-tethered sound recordings do not properly facilitate distribution without a digital first sale doctrine.[229] If, for example, a second-party purchaser legally acquires an NFT from a secondary marketplace, a digital first sale doctrine would protect the third party purchaser from attempts to restrain further alienation or impose downstream royalties under Section 106(3).[230] This approach would align with that of the *London-Sire Recs., Inc.* Court's holding that the sound recording can serve as the material object, rejecting the materiality interpretation of the Section 101 phonorecords definition.[231]

The downside to this approach is that it would require concerted congressional action. After sixty years of rejecting calls to extend the first sale doctrine to digital works, it seems rather unlikely that Congress will revisit this issue without pressure from the music industry. Given that NFTs are marketed as a disruptive technology, it remains to be seen whether the music industry would call for such a change. Whether extension of the first sale doctrine to digital works would further the public policy goals of the American copyright regime is beyond the scope of this work.[232]

C. Apply Section 109 to the Phonorecord

Finally, if we were to treat the sale of an NFT as a transfer of a fractionalized interest in ownership of the phonorecord, rather than a transfer of ownership of the digital file, Section 109 would apply without further con-

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[228] *Id.*

[229] *See* 2 Nimmer § 8.13[A], *supra* note 72.

[230] *Id.*

[231] *See London-Sire Recs., Inc.*, 542 F. Supp. 2d at 170–71 ("The Copyright Act . . . refers to materiality as a medium in which a copyrighted work can be "fixed.").

[232] *See generally* Kimberly A. Condoulis, *Let Me Sell My Song! The Need for a Digital First Sale Doctrine Amendment to the Copyright Act*, 22 B.U. J. SCI. & TECH. L. 121 (2016) (contending that a healthy resale market for digital copies of copyrighted works is necessary in order not to "stifle[ ] the Copyright Act's goal of increasing access to copyrighted works," and that technological advances that could not have been foreseen during drafting of the Copyright Act of 1976, now require legislators to update the Act for a digital first sale doctrine).

gressional action. "Physical copies of works in a digital format, such as CDs or DVDs, are subject to section 109 in the same way as physical copies of works in analog form."[233] Just as the downloading of a lawfully purchased music file onto a flash drive or iPod would not prohibit the owner of that material object from reselling their device,[234] Section 109 provides blanket immunity against claims of infringement to a consumer who buys and resells a minted NFT tethered to a lawfully created sound recording.

Because an NFT is an access token that points to a hard drive where a sound recording has been fixed in a digital music file, the sale of the NFT updates the ownership records on a blockchain ledger and possession of the access token is transferred from one party to the other without requiring an act of reproduction.[235] This results in a transfer of possession in a fractionalized interest in the portion of a hard drive—*i.e.*, the material object—storing the digital sound recording.[236]

Under this final approach, the parties are not solely buying and selling sound recordings, but *nonfungible* sound recordings fixed in unique material objects (*i.e.*, the unique hard drive acting as the phonorecord). By identifying a unique phonorecord, we can apply the traditional materialist interpretations of the first sale doctrine under Section 109 to the resale of NFTs without Congress acting to extend first sale protections to digital works.[237]

V. Conclusion

Over the past sixty years, Congress, under the guidance of the Copyright Office, has declined to recognize a digital first sale doctrine under

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[233] *See ReDigi Inc.*, 910 F.3d at 659 (quoting Patry on Copyright § 13:23 which also observed that § 109 permits the sale of an iPod that contains lawfully made digital music files).

[234] *Id.*

[235] *See* 2 Nimmer on Copyright § 8.11 fn 32. (citing H.R. Rep. No. 2237, 89th Cong., 2d Sess. 134 (1966) ("This definition clears up the question of whether the sale of phonorecords constitutes publication, and it also makes plain that any form or dissemination in which a material object does not change hands—performance or displays on television, for example—is not a publication no matter how many people are exposed to the work."); H.R. Rep. No. 83, 90th Cong., 1st Sess. 105 (1967) (same). Apart from replacing the initial word ("The" instead of "This"), the identical language appears in the final 1975 and 1976 Senate and House Reports for the final version of the current Act).

[236] Whether the file is stored on- chain or off- chain is immaterial to application of Section 109.

[237] At the time of the DMCA Report, several commentators suggested that Section 109 already applied to digital transmissions. See 2 Nimmer on Copyright § 8.13 fn 10.

Section 109 of the Copyright Act. By treating the sale of NFT-tethered sound recordings as a sale of a fractionalized interest in a phonorecord, rather than as a sale of the tethered digital file, Congress need not immediately act to remediate ongoing copyright misuse in the industry, nor risk stifling innovation in a rapidly evolving marketplace. If the parties are engaged in the lawful resale of particularly identifiable portions of hard drives, Section 109 already covers the downstream resale of these digital works. While there are strong arguments as to why Congress should or should not recognize a digital first sale doctrine, NFT-tethered sound recordings resolve the issue without requiring further Congressional action.