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Dancing in the Dark: Exploring the Collision of Copyright with NFTs & the Works They Represent

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ABSTRACT

The artist creates, by the mixing of his hands and his mind, an expression of story, life, or memory that, when offered to the world, grants others the ability to recall some element of the human experience through a perspective different from their own. The law has long recognized one's right to one's intangible property, offering copyright protection to authors for their works. This protection does not exist at the time of a legal declaration, but rather at the time the work is created. However, copyright protection is not unlimited, and authors do not enjoy a monopoly over every expression they create. Those expressions must be sufficiently original. This Comment addresses the application of copyright law to the emerging crypto-assets known as non-fungible tokens (NFTs).

The purpose of this Comment is threefold, but ultimately it seeks to prove that NFTs are not subject to copyright protection. First, this Comment seeks to prove the existence of a Natural Right Doctrine in copyright law. This Comment tracks natural rights to copyright protection from Locke and Blackstone, through English statutory and common law, the U.S. Constitution and the Federalist Papers, U.S. case law, and Title XVII of the United States Code (Copyright Act). This is done to demonstrate that the basic tenets of copyright protection do not and need not change as new technologies emerge. Second, this Comment seeks to explain the nature of NFTs and to distinguish them from the works to which they attach. An NFT is a script of computer code called a token, which acts as an authenticator on a blockchain for the work it is attached to. This Comment seeks to explain

the difference between NFTs and cryptocurrencies, the nature of each, and blockchain technology.

Finally, this Comment seeks to prove that the Merger Doctrine bars copyright protection of NFTs. This Comment posits that NFTs are not protectable because their function as an authenticator is so tied to their expression as unique code that protection of an NFT would grant the author a monopoly over the entire idea of non-fungible tokens rather than that singular expression. This Comment compares the function of an NFT to that of a key for an application programming interface (API) and examines the implications of the idea/expression dichotomy on computer code raised in Google v. Oracle (2021) to prove that NFTs are not subject to copyright protection under the Merger Doctrine.

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COMMENT

DANCING IN THE DARK: EXPLORING THE COLLISION OF COPYRIGHT WITH NFTS & THE WORKS THEY REPRESENT

Jake L. Bryant[†]

"[A]ll good things . . . come by grace and grace comes by art and art does not come easy."

- Norman Maclean, *A River Runs Through It and Other Stories*[1]

ABSTRACT

The artist creates, by the mixing of his hands and his mind, an expression of story, life, or memory that, when offered to the world, grants others the ability

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[1] NORMAN MACLEAN, A RIVER RUNS THROUGH IT AND OTHER STORIES 4 (1976).

to recall some element of the human experience through a perspective different from their own. The law has long recognized one's right to one's intangible property, offering copyright protection to authors for their works. This protection does not exist at the time of a legal declaration, but rather at the time the work is created. However, copyright protection is not unlimited, and authors do not enjoy a monopoly over every expression they create. Those expressions must be sufficiently original. This Comment addresses the application of copyright law to the emerging crypto-assets known as non-fungible tokens (NFTs).

The purpose of this Comment is threefold, but ultimately it seeks to prove that NFTs are not subject to copyright protection. First, this Comment seeks to prove the existence of a Natural Right Doctrine in copyright law. This Comment tracks natural rights to copyright protection from Locke and Blackstone, through English statutory and common law, the U.S. Constitution and the Federalist Papers, *U.S. case law, and Title XVII of the United States Code (Copyright Act). This is done to demonstrate that the basic tenets of copyright protection do not and need not change as new technologies emerge. Second, this Comment seeks to explain the nature of NFTs and to distinguish them from the works to which they attach. An NFT is a script of computer code called a token, which acts as an authenticator on a blockchain for the work it is attached to. This Comment seeks to explain the difference between NFTs and cryptocurrencies, the nature of each, and blockchain technology.*

Finally, this Comment seeks to prove that the Merger Doctrine bars copyright protection of NFTs. This Comment posits that NFTs are not protectable because their function as an authenticator is so tied to their expression as unique code that protection of an NFT would grant the author a monopoly over the entire idea of non-fungible tokens rather than that singular expression. This Comment compares the function of an NFT to that of a key for an application programming interface (API) and examines the implications of the idea/expression dichotomy on computer code raised in Google v. Oracle (2021) *to prove that NFTs are not subject to copyright protection under the Merger Doctrine.*

I. INTRODUCTION

The artist creates, by the investment of his labor, an expression of life, story, or memory that, when offered to the world, grants others the ability to

recall some element of the human experience through a perspective different from their own. Bruce Springsteen, Ernest Hemingway, Sylvia Plath, Steve Jobs—each and many more have used their minds for creative expressions that pulled their respective fields forward into new ages. From Asbury Park to Silicon Valley, the artistry of creative expression has complimented technological and societal advancement, and the intricacies of copyright protection play a pivotal role at that intersection.

Before the founding of the United States, western civilization recognized the need to protect the rights of a creator to the original expression of his mind. So fundamental are these rights that the founders of the United States saw fit to protect copyright in the Constitution.[2] It is now well established under copyright law that authors retain a monopoly over their original works of authorship for the remainder of their lives, and an additional seventy years, so long as the works are fixed in a tangible medium and are human readable.[3] Such protection does not merely extend to expressions considered traditional art, but also to such products of human ingenuity like computer programs.[4] This Comment addresses the nature of copyright protection in certain computer codes, namely non-fungible tokens (NFTs) in the emerging crypto-market.

Part II of this Comment addresses the jurisprudence and origin of copyright law in the United States. First, Part II.A. examines the existence of a Natural Right Doctrine in copyright established by John Locke and acknowledged by the Framers in the *Federalist Papers*, which offered support to the Constitution—the basis for U.S. copyright law.[5] Part II.B. explains the technology surrounding crypto-assets. Part III acknowledges that NFTs give no greater copyright protection in the assets to which they are linked.

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[2] *See* U.S. CONST. art. I, § 8, cl. 8.

[3] 17 U.S.C. § 102; 17 U.S.C. § 302.

[4] *See* 17 U.S.C. § 101; *see also* 17 U.S.C. § 106 (enumerating the exclusive rights granted to an author); 17 U.S.C. § 117(a) (enumerating limitations on a copyright monopoly over computer programs).

[5] *See* JOHN LOCKE, TWO TREATISES OF GOVERNMENT AND A LETTERCONCERNING TOLERATION 111–12 (Ian Shapiro ed., Yale Univ. Press 2003) (1690); THE FEDERALIST NO. 43 (James Madison); THE FEDERALIST NO. 78 (Alexander Hamilton).

Additionally, Part III examines the nature of copyright protectability in computer code by analyzing *Google v. Oracle America, Inc.*[6] and addressing the Merger Doctrine of copyright law and its application to computer codes, namely NFTs. Part IV of this Comment proposes that NFTs are not copyright protectable because the function of an NFT is so tied to its expression that the Merger Doctrine must apply to bar protectability. In proposing this, Part IV affirms that an NFT's function as a digital certificate of authenticity or digital identifier necessitates its expression as irreplicable, unique computer code.

II. BORN TO RUN: A HISTORY OF COPYRIGHT AND THE ADVANCEMENT OF HUMAN INGENUITY

A. *The Rising: The Origins of Copyright Law and Its Presence in the Digital Age*

Copyright law is largely a creature of statutory construction and is governed exclusively by federal law.[7] The foundational requirements of copyright are distinctly prescribed in the U.S. Constitution. It is crucial to first understand the unwavering, moral origins of copyright protection before applying the law to novel technologies. Article I, Section Eight, Clause Eight of the U.S. Constitution (the Intellectual Property Clause) states that Congress holds the enumerated power to "promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries."[8] Clause Eight grants Congress the power to effect legislation governing copyrights.[9] Yet, the origins of copyright protection predate the creature of constitutional construction we enjoy today, and the moral underpinnings of copyright

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[6] *See* Google LLC v. Oracle Am., Inc. (*Oracle II*), 141 S. Ct. 1183 (2021).

[7] *See* U.S. CONST. art. I, § 8, cl. 8.

[8] *Id.*

[9] *The Intellectual Property Clause*, LEGAL INFO. INST., https://www.law.cornell.edu/wex/intellectual_property_clause (last visited Sept. 11, 2022).

protection were detailed well before the United States ever fought for its independence.[10]

1. The Jurisprudence of U.S. Copyright Protection and Its Underlying Natural Right Doctrine

In his *Second Treatise of Government* from 1609, John Locke proffered that man has a natural, God-given[11] right to the "labour of his body, and the work of his hands . . . ."[12] Locke specifically detailed that, when man mixes his labor with the natural state of being to create or produce something different from its original form, the common right of all men to the thing is thereby extinguished.[13] Here, Locke's premise established the Natural Right Doctrine,[14] which is inherent to the originality requirement of copyright

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[10] Andrew P. Connors, *Dissecting Electronic Arts' Spore: An Analysis of the Illicit Transfer of Copyright Ownership of User-Generated Content in Computer Software*, 4 LIBERTY U. L. REV. 405, 408 (2010) (citing THE FEDERALIST NO. 43 (James Madison)).

[11] *See Ephesians* 4:28 (King James); *see also Genesis* 9:2 (King James); *Genesis* 1:26 (King James).

[12] LOCKE, *supra* note 5, at 111. Though never explicitly detailing intellectual property, Locke's labor theory explains the natural, moral foundation for property rights: that every man has a right to the works of his body and hands.

> Though the earth, and all inferior creatures, be common to all men, yet every man has a property in his own person: this nobody has any right to but himself. The labour of his body, and the work of his hands, we may say, are properly his. Whatsoever then he removes out of the state that nature hath provided, and left it in, he hath mixed his labour with, and joined to it something that is his own, and thereby makes it his property. It being by him removed from the common state nature hath placed it in, it hath by this labour something annexed to it that excludes the common right of other men. For this labour being the unquestionable property of the labourer, no man but he can have a right to what that is once joined to, at least where there is enough, and as good, left in common for others.

Id. at 111–12.

[13] *Id.*

[14] *Id.* For the purpose of this Comment and in the spirit of applying a more fundamental right to copyright protection, Locke's focus on natural rights in his Labor Theory will be referred to throughout this Comment as the "Natural Right Doctrine."

protection and was relied upon by those who drafted and supported the ratification of the U.S. Constitution.[15]

In the *Federalist Papers*, James Madison called for the protection of authors'[16] creations.[17] While many modern jurists interpret the language of *Federalist No. 43* as defining a utilitarian approach to copyright, Madison's use of the terms "public good" and "utility" were concerned with the finiteness of human reason, mankind's general depravity, and the protection of individual rights and liberties.[18] Madison appealed, in part, to the laws of Great Britain, which he contended had recognized the natural rights of a person to his creations before America's founding.[19] While Madison did not rely on British law as binding authority, he utilized the law as a historical reference to what Alexander Hamilton referred to in *Federalist No. 78* as the "reason and nature of the thing."[20] By this, Hamilton argued that when a superior preceding law exists, no subsequent inferior law should be preferred, and that the judiciary had a duty to uphold the greater and disregard the

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[15] For clarity, Locke's Natural Right Doctrine is distinct from the previously accepted "sweat of the brow" copyright doctrine. "Sweat of the brow" simply referred to the notion that simple diligence or "hard work" was the sole reason for copyright protection. *See* Feist Publ'ns, Inc. v. Rural Tel. Serv. Co., 499 U.S. 340, 352 (1991). "Sweat of the brow" negated Locke's idea that the work must be removed from a "state nature hath provided" and, instead, allowed copyright to protect underlying facts. *See id.*; LOCKE, *supra* note 5, at 111.

[16] An "author" is a person or entity in whom/which a copyright vests. Usually, this is the creator of the work itself, though copyright created under the scope of employment as a work made for hire belongs to the employer or commissioning party. *Definitions,* U.S. COPYRIGHT OFFICE, https://www.copyright.gov/help/faq-definitions.html (last visited Oct. 1, 2022).

[17] Connors, *supra* note 10, at 408.

[18] Randolph J. May & Seth L. Cooper, *The "Reason and Nature" of Intellectual Property: Copyright and Patent in* The Federalist Papers, 9 PERSP. FROM FSF SCHOLARS 1, 2–3 (2014) (first citing THE FEDERALIST NO. 78 (Alexander Hamilton); then citing THE FEDERALIST NO. 43 (James Madison)).

[19] *Id.* at 6; *see* Millar v. Taylor, [1769] 4 Burr. 2396 (Eng.) (KB) (defining "copy" as the "incorporeal right to the sole printing and publishing of somewhat intellectual, communicated by letters").

[20] May & Cooper, *supra* note 18 at 9.

lesser.[21] By invoking Hamilton's premise, Madison asserted that British law enumerated man's preexisting, natural right to his creations as the reason for protecting intellectual property.[22] Madison essentially claimed Locke's Natural Right Doctrine as a superior right that the judiciary had a duty to uphold. Through the *Federalist Papers* and the Constitution, Madison[23] and Hamilton implicitly applied Locke's Labor Theory to the protection of intellectual property rights, laying the foundation for Congress's enumerated power to implement copyright protection.[24]

However, the existence of natural rights to intellectual property neither contradicts nor diminishes the derivative utilitarian benefits.[25] The incentivization of creativity, the benefits conferred to society, and the costs of protecting these rights are all important concerns that sound policy can address.[26] Yet, utility serves only as a derivative—albeit necessary—principle of intellectual property.[27] Natural rights are the foundation upon which intellectual property is built.[28] Though the British precedent Madison mentioned would ultimately be rejected,[29] the Lockean principles echoed by

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[21] THE FEDERALIST NO. 78 (Alexander Hamilton). Hamilton's logic is employed by Madison in determining that the existence of a "natural right" be protected as a superseding authority. *See* THE FEDERALIST NO. 43 (James Madison).

[22] May & Cooper, *supra* note 18 at 3 (citing THE FEDERALIST NO. 43 (James Madison)).

[23] It is also worth noting, though not dispositive to the premise of this Comment, that Madison played a crucial role in drafting the U.S. Constitution such that he is often referred to as the Father of the Constitution. *See James Madison and the Federal Constitutional Convention of* 1787, LIBR. OF CONG., https://www.loc.gov/collections/james-madison-papers/articles-and-essays/james-madison-and-the-federal-constitutional-convention-of-1787/ (last visited Sept. 14, 2022). Thus, it is more certain than likely that Madison's Lockean beliefs supported not only the ratification of the Constitution, but the very construction of the Intellectual Property Clause.

[24] *See* THE FEDERALIST NO. 43 (James Madison); THE FEDERALIST NO. 78 (Alexander Hamilton); LOCKE, *supra* note 5 at 111–12.

[25] May & Cooper, *supra* note 18, at 3.

[26] *Id.*

[27] *Id.*

[28] *Id.*

[29] Wheaton v. Peters, 33 U.S. 591, 658 (1834).

figures such as Madison and Blackstone remain locked within historical precedent and tradition.[30]

The supposition that copyright law, like all other property rights, derives from the existence of a natural right left courts with an important decision to make: whether copyright law is under the exclusive jurisdiction of the federal government or whether copyright protection also exists at common law. The British laws Madison referenced had long held that copyright protection existed at common law,[31] which effectively prohibited protectable works from entering the public domain. Just over twenty years before the adoption of the U.S. Constitution, however, British law rejected the notion of common law protection and ratified the necessary existence of a limited term of protection.[32] Less than a century later, the Court under Chief Justice John Marshall, in *Wheaton v. Peters*, followed suit and affirmed the exclusive authority of Congress to govern copyright protection in the United States.[33] The Court also affirmed that the Intellectual Property Clause prohibited copyright protection from running in perpetuity or existing at common law.[34]

Having established its authority to enact copyright and patent laws, Congress needed to determine exactly what a copyright was. Title 17 of the U.S. Code (Copyright Act) proved to be Congress's answer to this question and established the nation's governing copyright laws.[35] The Copyright Act

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[30] 2 WILLIAM BLACKSTONE, COMMENTARIES *405–06.

[31] *See* GEORGE TICKNOR CURTIS, A TREATISE ON THE LAW OF COPYRIGHT 54–55 (The Lawbook Exchange, Ltd. 2005) (1847) (citing Millar v. Taylor, [1769] 4 Burr. 2303 (Eng.) (KB)).

[32] *See* 2 WILLIAM BLACKSTONE, COMMENTARIES *406; *see also* Donaldson v. Beckett [1774] 1 Eng. Rep. 129 (HL); Hinton v. Donaldson, [1773] ScotCS. (Sess.) 536 (deciding against common law protection in an unreported decision, which was relied upon in *Donaldson v. Beckett*).

[33] *Wheaton*, 33 U.S. at 658. The opinion, delivered by Justice M'Lean, was supported and influenced by the reasoning of Chief Justice John Marshall. *See id.* at 602.

[34] *See id.* at 592–93. The concerns of copyright protection running in perpetuity were limited in the Constitution and, later, the United States Code. U.S. CONST. art. I, § 8, cl. 8; 17 U.S.C. § 302.

[35] *See* H.R. REP. NO. 94-1476, at 47–49 (1976), *as reprinted in* 1976 U.S.C.C.A.N. 5659, 5660–62 (detailing the history of Title 17 of the United States Code).

in 17 U.S.C. § 102 applies copyright protection to those original works of authorship that are fixed in a tangible medium and are, either directly or with the aid of a device, capable of being perceived, reproduced, or communicated.[36] Because copyright protection remains an enumerated creature of congressional power, registration only lies in the hands of the federal government.[37] For example, an author must register his original work(s) with the Copyright Office before he can file a suit for infringement.[38] Yet registration is not required for a work to be protected.[39] Only the requirements set forth in 17 U.S.C. § 102 must be met for an author to receive copyright protection, and such protection vests at the time of creation.[40] This implicitly recognizes the existence of a natural right imbued not by the government but through the creation of the work itself. The lack of a need for registration demonstrates that copyright protection does not exist within the total control of the government but naturally vests at the time the work is authored.[41] Instead, the registration requirement for lawsuits can be seen as a means of obtaining standing in federal court. The prohibition of state registrations serves the utilitarian purpose of maintaining a uniform national notice of rights. In essence, copyright protection is a natural right of the author and is strengthened by the statutory grant of limited monopolies over protected works.

In further accordance with the provisions of the U.S. Constitution, the Copyright Act's third chapter limits the scope of a copyrighted work's

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[36] 17 U.S.C. § 102. Section 102 further enumerates which works are protectable. "Works of authorship include the following categories: (1) literary works; (2) musical works, including any accompanying words; (3) dramatic works, including any accompanying music; (4) pantomimes and choreographic works; (5) pictorial, graphic, and sculptural works; (6) motion pictures and other audiovisual works; (7) sound recordings; and (8) architectural works." *Id.* The only works of authorship that directly concern this Comment are literary works and pictorial works.

[37] *See* 17 U.S.C. § 408(a).

[38] *Id.* § 411(a).

[39] *Id.* § 408(a).

[40] *Id.* § 102.

[41] *See id.* §§ 102, 408(a).

protection. It provides in 17 U.S.C. § 302 that, generally, an original work of authorship is protectable for the duration of the author's life and for a term of seventy years after the author's death.[42] When considering Madison's application of the Natural Right Doctrine to intellectual property, the protection of copyright for the duration of an author's life also affirms the author's natural right to the works of his mind.[43] The post-mortem term of seventy years allows the author to provide royalties to his heirs before the work enters the public domain,[44] but unlike the life of the author, this portion of § 302 may extend a more utilitarian purpose. This limitation echoes the Supreme Court's reasoning in *Wheaton* and, along with the exclusive rights prescribed to copyright holders in 17 U.S.C. § 106, establishes the general bounds of copyright protection.[45]

2. Copyright Protection in the Digital Age

While the Copyright Act established the elements of copyright protection, courts were left with the need to discern the meaning of certain terms within the Code's provisions. One concern regarding whether a work is protectable arises over 17 U.S.C. § 102's originality requirement.[46] Crucially, the Supreme Court, in *Baker v. Selden,* acknowledged that ideas alone are unprotectable.[47] But if the manner in which ideas are expressed is sufficiently original, then copyright protection may vest.[48] The Supreme Court has further explained the policy behind this distinction, reasoning that the "idea/expression dichotomy '[strikes] a definitional balance between the First

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[42] *Id.* § 302. Section 302 further defines that works made for hire, otherwise known as those works deemed to be of corporate authorship, are protectable "for a term of ninety-five years from the year of its first publication, or a term of 120 years from the year of its creation, whichever expires first." *Id.*

[43] *See generally* THE FEDERALIST NO. 43 (James Madison); LOCKE, *supra* note 5 at 111–12.

[44] *See, e.g.*, Steve Courtney, *Mark Twain's Copyright Fight*, INVENTOR'S EYE, https://www.uspto.gov/learning-and-resources/newsletter/inventors-eye/mark-twains-copyright-fight (last visited Sept. 22, 2022).

[45] *See generally* Wheaton v. Peters, 33 U.S. 591, 593 (1834); 17 U.S.C. § 106.

[46] 17 U.S.C. § 102 (requiring that works of authorship must be *original*).

[47] Baker v. Selden, 101 U.S. 99, 103–04 (1880).

[48] *Id.* at 104–05; *see* 17 U.S.C. § 102.

Amendment and the Copyright Act by permitting free communication of facts while still protecting an author's expression.'"[49] In another landmark decision, the Supreme Court, in *Feist Publications, Inc. v. Rural Telephone Service Co.*, acknowledged that for a work to be sufficiently original it must be independently created and contain a modicum of creativity, which is beyond that of alphabetizing a phone book.[50]

For example, the concept of a young protagonist who is told by an old mentor that he possesses magical powers before venturing off to save the world is a thematic idea; no registration examiner would be likely to grant a monopoly over that premise to one author. However, a tale where Obi-Wan Kenobi tells Luke Skywalker that he can be a Jedi Knight like his father, and where Luke subsequently rescues Princess Leia and destroys the Death Star to save the galaxy is a sufficiently creative, original expression of that theme; so George Lucas gained copyright protection over his original script for *Star Wars* the moment he wrote it.[51] The idea presented here is a birds-eye demonstration of the Hero's Journey[52] and is the unprotectable element of this example because there are innumerable ways to express that basic theme.[53] Yet *Star Wars'* script, characters, and worlds gain copyright protection because Lucas independently created an original expression of the Hero's Journey theme.

With the emergence of the Internet and its inevitable digital era, copyright law was faced with challenges in adapting to a vast, rapidly developing field. This led to the question of whether computer programs are copyright

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[49] Harper & Row, Publishers, Inc. v. Nation Enters., 471 U.S. 539, 556 (1985) (alteration in original) (quoting Harper & Row, Publishers, Inc. v. Nation Enters., 723 F.2d 195, 203 (2d Cir. 1983)).

[50] Feist Publ'ns, Inc. v. Rural Tel. Serv. Co., 499 U.S. 340, 345, 363 (1991).

[51] STAR WARS: EPISODE IV – A NEW HOPE (Lucasfilm 1977).

[52] *The Monomyth (The Hero's Journey): The Hero's Journey*, GRAND VALLEY STATE UNIV., https://libguides.gvsu.edu/c.php?g=948085&p=6857311 (last visited Oct. 8, 2022).

[53] *See, e.g.*, J.R.R. TOLKIEN, THE LORD OF THE RINGS (1954); J.K. ROWLING, HARRY POTTER AND THE PHILOSOPHER'S STONE (1997), CHRISTOPHER PAOLINI, ERAGON (Paolini Int'l 2002); HOMER, THE ODYSSEY (George Palmer trans., Riverside Press 3d ed. 1892) (1614). Each of these stories are driven by the Hero's Journey theme as a core element of their expression.

protectable.[54] The Copyright Act, in § 102, provided some direction. Namely, the statute provides that original works of authorship are protectable if they are fixed in a tangible medium and if they are able to be perceived, reproduced, or communicated either (1) directly by the human eye or; (2) with the help of a machine.[55] Essentially, Section 102 states that copyright protection applies even to those works of authorship that, while not readily understood by the human eye, are translated by machines into forms readily perceived by people.[56] Such is the case with computer programs, and 17 U.S.C. § 101 specifically lists computer programs as copyrightable subject matter under the "literary works" category.[57]

In *Computer Associates International, Inc. v. Altai*, *Inc.*, the Second Circuit reached a decision regarding the relation between copyright law and computer programs.[58] The court first acknowledged a utilitarian balancing act for copyright protection, stating that:

> [C]opyright law seeks to establish a delicate equilibrium. On the one hand, it affords protection to authors as an incentive to create, and, on the other, it must appropriately limit the extent of that protection so as to avoid the effects of monopolistic stagnation. In applying the federal act to new types of cases, courts must always keep this symmetry in mind.[59]

The court recognized the dichotomy between man's natural right to his original works and the need to support the constitutional goal to incentivize the "Progress of Science and useful Arts"[60] by protecting that which is

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[54] *See generally* Comput. Assoc. Int'l, Inc. v. Altai, Inc., 982 F.2d 693 (2d Cir. 1992); Capitol Records, LLC v. ReDigi Inc., 910 F.3d 649 (2d Cir. 2018); Google LLC v. Oracle Am., Inc. (*Oracle II*), 141 S. Ct. 1183 (2021); Oracle Am., Inc. v. Google Inc. (*Oracle I*), 750 F.3d 1339 (2014).

[55] 17 U.S.C. § 102.

[56] *Id.*

[57] *Id.* §§ 101, 102.

[58] *See Altai*, 982 F.2d 693.

[59] *Id.* at 696 (citing Twentieth Century Music Corp. v. Aiken, 422 U.S. 151, 156 (1975)).

[60] U.S. CONST. art. I, § 8, cl. 8.

common to all.[61] While the court in *Altai* acknowledged the utilitarian benefits conferred through its balancing act, Locke's Natural Right Doctrine flowed through the court's recognition of the need to incentivize the protection of artist's rights.[62] Granting an author protection for his works promotes further creation by ensuring to the author a limited monopoly over his original works. The fact that authors' independently created works are protected even without a federal registration demonstrates that the courts adhere to the principles of the Natural Rights Doctrine. If the purpose of copyright protection were merely incentive-based and created by the federal government, then protection could only be extended by federal registration of the copyright acknowledging it as a protected work.

However, *Altai* used this balancing act to frame the issue as to which elements of computer programs are protectable.[63] First, the court looked to legislative history to confirm that the Copyright Act protects computer code as literary works regardless of whether 17 U.S.C. § 101 explicitly states that computer programs are literature.[64] The court ultimately adhered to the idea/expression dichotomy prescribed in *Baker* and acknowledged that copyright "protects computer programs only 'to the extent that they incorporate authorship in [the] programmer's expression of original ideas, as distinguished from the ideas themselves.'"[65]

Next, the *Altai* court acknowledged that "[i]t is now well settled that the literal elements of computer programs . . . are the subject of copyright protection."[66] The literal elements of computer code are strictly textual, such as the precise lines of code in a computer program or the lines of prose in a novel.[67] Of course, the originality requirements set forth in 17 U.S.C. § 102

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[61] *Altai.*, 982 F.2d at 696.

[62] *Id.*

[63] *Id.* at 701–02.

[64] *Id.* at 702; *see also* H.R. REP. NO. 94-1476, at 54 (1976), *as reprinted in* 1976 U.S.C.C.A.N. 5659, 5667 (acknowledging computer code as literary works under 17 U.S.C. § 101).

[65] *Altai*, 982 F.2d at 703 (quoting H.R. REP. NO. 94-1476 at 54).

[66] *Id.* at 702.

[67] *Id.*

and *Feist* must still be met for computer code to be protectable.[68] The court further stated that the non-literal elements of computer code can be protectable.[69] The non-literal elements of computer code are those which are "not reduced to written code."[70]

The Second Circuit adopted a new test in determining whether non-literal elements of computer code are protectable.[71] Deemed the abstraction-filtration-comparison (AFC) test, the court applied the new standard to determine if the expression of non-literal elements of a computer program were so removed from the idea that they became protectable.[72] In determining whether a computer program's abstractions, or non-literal elements, are protectable, the court detailed the following test:

> At the lowest level of abstraction, a computer program may be thought of in its entirety as a set of individual instructions organized into a hierarchy of modules. At a higher level of abstraction, the instructions in the lowest-level modules may be replaced conceptually by the functions of those modules. At progressively higher levels of abstraction, the functions of higher-level modules conceptually replace the implementations of those modules in terms of lower-level modules and instructions, until finally, one is left with nothing but the ultimate function of the program. . . . A program has structure at every level of abstraction at which it is viewed. At low levels of abstraction, a program's structure may be quite complex; at the highest level it is trivial.[73]

Through this, the court established a tiered system of non-literal abstractions in a computer program, ranging from those abstractions that are likely to be

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[68] 17 U.S.C. § 102; Feist Publ'ns, Inc. v. Rural Tel. Serv. Co., 499 U.S. 340, 345 (1991).

[69] *Altai*, 982 F.2d, at 702–03.

[70] *Id.* at 696.

[71] *Id.* at 706–10.

[72] *Id.* at 706–07.

[73] *Id.* at 707.

subject to protection to those that are not.[74] The *Altai* court took a step in applying the idea/expression dichotomy to computer code to determine when the expression of the work is so tied to the idea and function of the program that the code is no longer protectable.[75]

The court then approached the filtration portion of the AFC test.[76] Filtration brought the protectability analysis to ground by "examining the structural components at each level of abstraction to determine whether their particular inclusion at that level was 'idea' or was dictated by considerations of efficiency, so as to be necessarily incidental to that idea . . . ."[77] This step focused on filtering out concrete elements of the code that came from the public domain, elements dictated by external factors, and elements dictated by efficiency.[78] By examining elements dictated by efficiency, the court expressly called for the application of copyright's Merger Doctrine, discussed in Part III of this Comment, as a compelling and efficient method of "eliminat[ing] non-protectable expression contained in computer programs."[79] After categorizing the abstractions and filtering out non-protectable elements, the court could then compare the protectable elements of the plaintiff's program with those used by the alleged infringer.[80] In other words, the court could then test for substantial similarity, a key element of infringement, between the programs.

Because the AFC test is crucial to understanding the general limits of copyright protectability for computer programs, it finds its place here in examining the role of copyright in the digital era. While issues of fair use, Digital Millennium Copyright Act (DMCA) takedowns, and other areas are

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[74] *Id.*

[75] Comput. Assoc. Int'l, Inc. v. Altai, Inc., 982 F.2d 693, 706–07 (2d Cir. 1992). This Comment revisits the test from *Altai* to examine its application to the Merger Doctrine. *See* discussion *infra* Section III.B.1.

[76] *Altai*, 982 F.2d at 707.

[77] *Id*.

[78] *Id.* at 707–710.

[79] *Id.* at 709.

[80] *Id.* at 710, 714–15.

also concerns of copyright law's presence in the digital world,[81] this Comment is primarily concerned with determining when and which computer programs are protectable, not defenses or procedures against infringement.[82]

B. *Jungleland: Crypto-assets, Cryptocurrencies, and Blockchain Technology*

Having established the Natural Right Doctrine as inherent to copyright protection, the concepts of crypto-technologies must be explained before examining the protectability of certain assets. A proverbial leviathan of the digital age, the rise of crypto-assets and blockchains continue to fascinate and perplex users as the world endeavors to discern how best to utilize these novel technologies. However, crypto-technologies are not the fearsome beasts they seem to be. After a careful examination of the nature of these technologies, specifically non-fungible tokens, the premise that sufficiently original works are the natural right of their creators will remain the threshold in determining protectability for crypto-assets, just like any other work.[83]

1. What are Crypto-assets and Cryptocurrencies?

To best understand this technology, cryptocurrencies and crypto-assets must first be distinguished. A crypto-asset is a form of digital asset that utilizes cryptographic methods "to function as a store of value, medium of exchange, unit of account, or decentralized application," the transaction of which is recorded on a blockchain.[84] Cryptocurrencies are subsets of crypto-assets and are a type of virtual currency.[85] Cryptocurrencies, like other virtual currencies, are fixed only in an electronic form as a representation of value

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[81] NAT'L RSCH. COUNCIL, COPYRIGHT IN THE DIGITAL ERA: BUILDING EVIDENCE FOR POLICY 18 (Stephen A. Merrill & William J. Raduchel eds., 2013).

[82] *See generally* Google LLC v. Oracle Am., Inc. (*Oracle II*), 141 S. Ct. 1183 (2021); 17 U.S.C. §§ 107, 512.

[83] *See* discussion *supra* Section II.A.1.

[84] *Cryptoasset*, COINMARKETCAP, https://coinmarketcap.com/alexandria/glossary/cryptoasset (last visited Oct. 8, 2022).

[85] Staci Duros, *Cryptocurrency and Blockchain: Background and Regulatory Approaches*, WIS. POL'Y PROJECT, Sept. 2018, at 1, 1.

for either real or virtual currencies.[86] Real currencies are simply coin and paper monies of given countries designated as legal tender, while virtual currencies are any currencies existing in a digital format regardless of whether they are tied to the values of real currencies.[87] For example, the video game *Star Wars Battlefront II* utilizes several virtual currencies, such as "galactic credits," which players can earn and spend in-game but are not fungible with any real currency.[88]

Conversely, some virtual currencies, especially decentralized virtual currencies, can hold *real*[89] value. Decentralized virtual currencies are those that have "no central administrating authority and no central monitoring system or oversight."[90] Often, these are cryptocurrencies. While all cryptocurrencies are a form of virtual currency, not all cryptocurrencies hold strictly virtual value. Cryptocurrencies like Bitcoin and Ethereum are decentralized virtual currencies that hold a valid exchange value with real currencies, including the U.S. dollar.[91] These are "real-value" cryptocurrencies. Some cryptocurrencies, however, operate like *Battlefront II*'s virtual currency, which only holds value within the context of the game or platform with no valid exchange value to real currency. These are "virtual-value" cryptocurrencies.

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[86] *Id.*

[87] *Id.* at 1 nn.3–4.

[88] Jesse Vitelli, *Star Wars Battlefront II: What Credits Are Used For & How to Get Them*, TWINFINITE (June 8, 2020), https://twinfinite.net/2020/06/star-wars-battlefront-2-credits/.

[89] In this instance, "*real*" refers to a value which is congruent with real currency.

[90] Duros, *supra* note 85, at 2.

[91] *Ethereum USD (ETH-USD)*, YAHOO! FIN., https://finance.yahoo.com/quote/ETH-USD/ (last visited Oct. 8, 2022) (reporting the value of Ethereum as $1,757.23 as of Oct. 8, 2022).

2. This Is the Code You're Looking For: Understanding NFTs

Like cryptocurrencies, NFTs are a form of crypto-asset.[92] However, there is a fundamental difference between NFTs and currencies like Bitcoin or Ethereum. NFTs, "which differ from fungible cryptocurrencies, are blockchain-certified, purchasable digital assets which hold unique, individual value."[93] Fungibility is a concept springing from economic and accounting literature.[94] The term "fungible" means "anything that is interchangeable with an identical or similar object."[95] Cryptocurrencies and traditional forms of real currency are fungible in nature,[96] meaning that they can be traded at a one-to-one value for another equivalent unit of that currency. The fungibility of equivalent units allows currencies to function as a viable medium of exchange.[97]

NFTs, by their very nature, are different from cryptocurrencies. An NFT's unique value stems from its nature as a digital token comprised of irreplicable code that distinguishes the token from others on the relevant blockchain.[98] While NFTs can be purchased, "they cannot be traded equally for another NFT because each [token] holds its own unique individual value."[99]

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[92] Abbi White & Jake Bryant, *Non-fungible Tokens and the Law: The Basics*, DARKHORSE L. (Oct. 13, 2021), https://darkhorse.law/what-are-nfts-lynchburg-copyright-attorneys/. For the purpose of this Comment, NFTs are also colloquially referred to as "tokens."

[93] *Id.*

[94] Usman W. Chohan, *Non-Fungible Tokens: Blockchains, Scarcity, and Value* 2 (Critical Blockchain Rsch. Initiative, Working Paper, 2021), https://ssrn.com/abstract=3822743.

[95] *Id.*

[96] *Id.*

[97] *Id.*

[98] Jonathan Emmanuel & Gavin Punia, *Non-fungible Tokens: What's All the Fuss?*, BIRD & BIRD (July 4, 2021), https://www.twobirds.com/en/news/articles/2021/uk/nonfungible-tokens-whats-all-the-fuss.

[99] White & Bryant, *supra* note 92.

a. NFT "minting" and the ERC-721 programming standard

While the term "NFT" is most commonly used to refer to an artistic work as a whole, a work only becomes an NFT when it is attached to a unique script of code—the token—in a process called "minting." Minting occurs when a digital file of a work is uploaded to a digital auction house[100] and linked with an NFT that records that work on the relevant blockchain.[101] This is achieved by using smart contracts, which are coded transaction functions that execute an agreement function when certain pre-determined conditions are met.[102]

The most widely adopted standard for establishing a uniform application programming interface (API)[103] through which the minting process occurs was established through ERC-721 in 2018.[104] ERC-721, also referred to as EIP-721, is a widely adopted coding structure for an API providing the basic functionality to track and transfer NFTs and smart contracts on a blockchain.[105] Essentially, ERC-721 allows "wallet/broker/auction applications to work with any NFT on Ethereum."[106] Marketplaces that adhere to ERC-721 can effectively implement the necessary unique code into a digital work, then record the work on the blockchain, and conduct and track the sale of the minted NFT on the Ethereum blockchain.[107]

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[100] *See, e.g.* OPENSEA, https://opensea.io (last visited Sept. 15, 2022); FOUNDATION, https://Foundation.app (last visited Sept. 15, 2022).

[101] Chohan, *supra* note 94, at 3; *see also* Emmanuel & Punia, *supra* note 98. See *infra* Section II.B.3.

[102] *Smart Contracts Defined*, IBM, https://www.ibm.com/topics/smart-contracts (last visited Oct. 10, 2022).

[103] *See infra* Section III.B.2 (describing API coding and applying a copyright protectability analysis to API).

[104] William Entriken et al., *EIP-721: Non-Fungible Token Standard*, ETHEREUM IMPROVEMENT PROPOSALS (Jan. 24, 2018), https://eips.ethereum.org/EIPS/eip-721.

[105] *Id.*

[106] *Id.*

[107] *Id.*; *see* Chohan, *supra* note 94, at 3; Nico, *How to Make an NFT in 14 Lines of Code*, FREECODECAMP (Oct. 14, 2021), https://www.freecodecamp.org/news/how-to-make-an-nft/.

Utilizing an ERC-721 standard, smart contracts identified by an NFT are recorded and tracked on a compatible blockchain.[108] Smart contracts are if-then code functions that execute blockchain transactions.[109] For the purpose of this Comment, it is only essential to understand the relationship between (1) the NFT, (2) the smart contract, (3) the blockchain,[110] and (4) the digital work that the smart contract transacts and that the NFT identifies. Essentially a smart contract *executes* a transaction on a blockchain for the digital work, and the NFT, which is unique token code, *identifie*s the work and transaction on the blockchain.[111]

b. Distinguishing two categories of NFTs

NFTs have only recently emerged as a popular asset, but the potential staying power of these tokens is growing. The non-fungibility of an NFT demonstrates value to many due to the scarcity arising from assets that are inherently unique.[112] The ability to track tokens on the blockchain allows owners to mint and sell NFTs on a user-facing marketplace backed by a decentralized ledger, offering a greater sense of security to many who would use them.[113] While the potential of NFTs is multifaceted, there are two primary categories of NFT uses.[114]

(1) Category 1 NFTs

Category 1 NFTs are tokens linked to a tangible asset.[115] Sellers "can use NFTs to authenticate tangible goods by creating a non-fungible token for each collectible, effectively attaching a 'digital certificate of authenticity' to

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[108] *Smart Contracts Defined*, *supra* note 102.

[109] Jennifer Li & Mohamad Kassem, *Applications of Distributed Ledger Technology (DLT) and Blockchain-enabled Smart Contracts in Construction*, 132 AUTOMATION CONSTR. 1, at 3 (2021).

[110] *See infra* Section II.B.3 (explaining blockchain technology).

[111] *See generally* Entriken et al., *supra* note 104 (explaining ERC-721 initial programming standard); *Smart Contracts Defined*, *supra* note 102.

[112] Chohan, *supra* note 94, at 2–3.

[113] *See* Emmanuel & Punia, *supra* note 98.

[114] *Id.*

[115] *Id.*

the collectible."[116] Here, the buyer purchases a physical asset and the seller transfers both the physical asset and an NFT that contains a digital certificate of authenticity tied to the physical asset.[117]

Category 1 NFTs provide the owner with immutable proof of ownership of the physical asset that is digitally recorded and thus less likely to be lost or destroyed.[118] Further, each time the asset and NFT are sold, the data backing the NFT is updated on the blockchain to reflect a change in ownership.[119] The use of Category 1 NFTs demonstrates potential in reducing counterfeit markets for collectibles and presents a myriad of options for businesses dealing in custom goods.[120]

(2) Category 2 NFTs

Category 2 NFTs identify and represent a right to do something with a licensed copy of a digital asset.[121] From digital novelties like Cryptokitties to applications with digital fine art and physical collectibles, NFTs have recently skyrocketed to popularity.[122] In fact, a digital artist sold an NFT of his collage, *Everydays: The First 5000 Days*, at auction for $69 million, making his piece the first NFT sold at a major auction house and "the third most expensive artwork ever sold at auction by a living artist."[123] Since then, NFTs have joined the digital renaissance spurred by the emergence of crypto-assets with thousands of artists, including major celebrities, launching their own

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[116] White & Bryant, *supra* note 92.

[117] Emmanuel & Punia, *supra* note 98.

[118] *Id.*

[119] *Id.*

[120] White & Bryant, *supra* note 92.

[121] Emmanuel & Punia, *supra* note 98.

[122] *Id.*

[123] Angus Berwick & Elizabeth Howcroft, *From Crypto to Christie's: How an Indian Metaverse King Made His Fortune*, REUTERS (Nov. 17, 2021), https://www.reuters.com/investigates/special-report/finance-crypto-sundaresan/.

tokens.[124] Nike even received a patent specific to NFT generation and minting for cryptographic, digital footwear.[125]

Category 2 NFTs are the method by which artists can achieve such high value for their works. This form of NFT is a unique code used to record licensing rights to a copy of a digital asset on the blockchain.[126] Category 2 NFTs are the most common form of the token, possibly due to their heavy reliance on the widely adopted ERC-721 standard, which allows for interoperability between Ethereum wallets, brokers, and marketplaces.[127] The tokens are generally minted through their publication on Ethereum marketplaces, which then attach the requisite unique code to an uploaded digital asset.[128] The NFT attached to the asset is then recorded on the blockchain and auctioned on the marketplace. Through this process, buyers gain a license to an authenticated copy of a digital work.[129]

OpenSea, a dominant NFT marketplace, demonstrates the financial relationship between buyers and sellers engaging in the sale of digital asset licensing. On OpenSea, Category 2 NFTs are sold either by bid auctions or fixed prices with a percentage of the sale price paid to OpenSea as a service fee.[130] Depending on whether the sale is at auction or fixed, either the seller or the buyer pays a "gas fee," the cost incurred by conducting a transaction on the Ethereum blockchain.[131] Further, if a buyer resells the NFT, they will pay both the aforementioned service fee as well as a 3% royalty paid to the

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[124] Langston Thomas, *5 Celebrities Who Nailed Their NFT Drops*, NFT NOW (Oct. 11, 2021), https://nftnow.com/lists/stars-nft-drops/; Subin Hong, *9 Celebrities Who Have Entered the NFT World, From Leo Messi to Justin Bieber*, LIFESTYLE ASIA (Jan. 5, 2022, 4:11 PM), https://www.lifestyleasia.com/hk/culture/the-arts/celebrity-nfts-cryptocurrency-metaverse/.

[125] U.S. Patent No. 10,505,726 (filed May 28, 2019).

[126] Emmanuel & Punia, *supra* note 98.

[127] *See* Entriken et al., *supra* note 104; *supra* Section II.B.2.a.

[128] *See* OPENSEA, https://opensea.io (last visited Sep. 15, 2022).

[129] Emmanuel & Punia, *supra* note 98.

[130] *How Do I Sell an NFT?*, OPENSEA, https://support.opensea.io/hc/en-us/articles/360063498333-How-do-I-sell-an-NFT- (last visited Sep. 17, 2022).

[131] *Who Pays the Gas Fees on OpenSea?*, OPENSEA, https://support.opensea.io/hc/en-us/articles/360061699514-Who-pays-the-gas-fees- (last visited Sep. 17, 2022).

creator of the NFT.[132] Through this process, artists are able to track and record sales of their digital assets and receive kickbacks from the subsequent sale of their NFTs from buyer to buyer. While the scope of this Comment includes NFTs as a whole, the most commonly traded NFTs with readily apparent licensing concerns are Category 2 NFTs.[133]

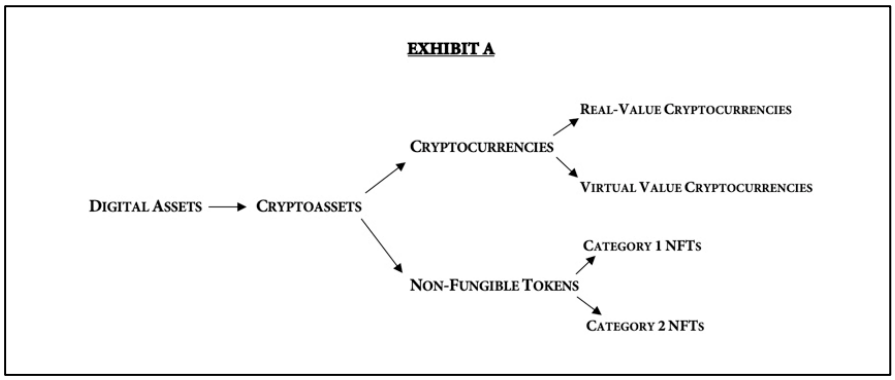

Exhibit A: Crypto-asset Category Map

3. What Is Blockchain Technology?

Perhaps the most daunting appendage of the crypto-asset leviathan is the ever-misunderstood concept of blockchain technology. Blockchain is a foundational element and predecessor of cryptocurrencies and NFTs.[134] At its broadest, blockchain technology is a tamper-resistant, digital ledger system that is distributed rather than a centralized repository governed by a central authority.[135] Informally, blockchain is best defined as:

> [D]istributed digital ledgers of cryptographically signed transactions that are grouped into blocks. Each block is

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[132] OPENSEA, *supra* note 130.

[133] *See infra* Section III.A. Other crypto-asset tokens do exist but are beyond the scope of this Comment. The map in Exhibit A is intended to specifically distinguish NFTs from cryptocurrency.

[134] DYLAN YAGA ET AL., NAT'L INST. OF STANDARDS & TECH., BLOCKCHAIN TECH. OVERVIEW 1 (2018).

[135] *Id.*

> cryptographically linked to the previous one (making it tamper evident) after validation and undergoing a consensus decision. As new blocks are added, older blocks become more difficult to modify (creating tamper resistance). New blocks are replicated across copies of the ledger within the network, and any conflicts are resolved automatically using established rules.[136]

The aforementioned blocks are stored in individual systems within a blockchain called "nodes."[137] An internal report to the Department of Commerce identified four key characteristics of blockchains: they operate as a ledger, they are secure, they are shared, and they are distributed.[138] As a ledger, blockchains, unlike traditional databases, provide full transactional histories without overriding prior values or transactions.[139] Next, blockchains are cryptographically secured to ensure that data contained within the ledger is attestable and is not tampered with.[140] Cryptographic encryptions help protect the blockchain by securing the technology against bad actors who might tamper with the blockchain by modifying blocks or forging transactions.[141] Next, the ledger is shared between multiple participants, providing greater transparency from the ledger to the participants.[142] Finally, blockchains can be distributed, which allows for scaling the number of nodes in which blocks are stored on the blockchain.[143] Essentially, more nodes in the distribution reduces the ability of bad actors to "impact the consensus protocol used by the blockchain."[144]

Blockchain distribution further achieves greater security through decentralization. A decentralized system is a subset of distributed systems in

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[136] *Id.*

[137] *Id.* at 3.

[138] *Id.* at 2–3.

[139] *Id.* at 2.

[140] YAGA, *supra* note 134, at 2.

[141] *Id.* at 1–2.

[142] *Id.* at 2.

[143] *Id.* at 3.

[144] *Id.*

which individual nodes do not have complete system information.[145] Like other distributed systems, decentralized systems share processing across multiple nodes.[146] However, decentralized systems also distribute governance over the system itself such that no singular authority exists, but rather an algorithm "identifies *focal* resolutions of normative issues" on the blockchain.[147] Michael Abramowicz, a leading scholar on algorithmic decentralization network governance systems, explained that decentralized governance simply means a "set of rules that allow some collective to produce discernible decisions without appointing individuals or entities to make those decisions."[148]

Digital distributed and decentralized systems are typically created by implementing peer-to-peer (P2P) networks.[149] These networks are defined as "transient Internet network[s] that allow[] a group of computer users with the same networking program to connect with each other and directly access files from one another's hard drives."[150] P2P network architecture is characterized through the implementation of a structure in which each node in the system has the same capabilities and responsibilities.[151] Tasks in the system "are distributed amongst peers," which "simultaneously function[] as both 'clients' and 'servers' to other peers" within that network.[152] Regarding blockchain technology, the decentralized ledger is "distributed across the globe via a network of private computers that are both storing data and executing computations."[153] Every private computer is a node within the

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[145] Mari Eagar, *What is the Difference Between Decentralized and Distributed Systems?*, ECONOVA (Nov. 4, 2017), https://medium.com/distributed-economy/what-is-the-difference-between-decentralized-and-distributed-systems-f4190a5c6462.

[146] *Id.*

[147] Michael Abramowicz, *The Very Brief History of Decentralized Blockchain Governance*, 22 VAND. J. ENT. & TECH. L. 273, 277 (2020).

[148] *Id.* at 276, 278.

[149] Duros, *supra* note 85, at 2.

[150] Kevin Butterfield, *Peer-to-Peer Networks*, 27 TECH. SERVS. L. LIBR. 9 (2002).

[151] Duros, *supra* note 85, at 2 n.9.

[152] *Id.*

[153] *Id.* at 2.

blockchain P2P network and each houses a copy of the ledger, allowing the nodes to validate each new block transaction while maintaining updated copies of the ledger across the entire blockchain.[154]

III. DARKNESS ON THE EDGE OF TOWN: PROBLEMS WITH NFT PROTECTABILITY

Having established both the history of a natural right in copyright protection and the distinct technologies at play in NFT transactions, one question remains: what, if any, copyright protection should be extended to NFTs? While NFTs have yet to be the subject of many legal disputes, existing copyright law and the dissection of the elements of protectable works provide insight into how courts should rule when faced with the issue.

NFTs should not be granted copyright protection under the Merger Doctrine. In order to reach this conclusion, two primary issues must be addressed. First, NFTs must be distinguished from the art to which they attach. Second, the effect and scope of the Supreme Court's 2021 decision in *Google LLC v. Oracle America, Inc.* regarding the Merger Doctrine's applicability to computer code must be examined.[155]

A. *(Not So) Brilliant Disguise: Distinguishing NFTs From the Works to Which They Attach*

To best understand the application of copyright law to NFTs, it is necessary to discern the relationship between NFTs and the property they authenticate. This is especially true as market participants can mistake the purchase of NFTs for the purchase of the copyright to the underlying works. It is already established that an NFT is a script of computer code used to authenticate other property and allows digital art to be sold on a blockchain marketplace.[156] Once identified, the distinction is easy to make. There is the initial work being sold for value and there is the NFT, which derives its value

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[154] *Id.* For a visual example of a blockchain transaction, see *id.* at 7 fig.2. This visual demonstrates a stereotypical cryptocurrency transaction on a blockchain. Encryption keys and digital wallets are beyond the scope of this Comment but relate to the cryptographic methods used to secure blockchain/cryptocurrency transactions. *Id.*

[155] *See* Google LLC v. Oracle Am., Inc. (*Oracle II*), 141 S. Ct. 1183 (2021).

[156] *Supra* Section II.B.2.

from its authenticating nature on a blockchain.[157] It is well established that the works an NFT authenticates are copyright protectable if the works are sufficiently original.[158] Further, copyright protection extends to computer code.[159] The question remains as to whether copyright protection for either changes as NFTs blur the lines between the code and the works to which they attach.

The simple answer is no. Copyright protection for original works does not inherently change with the emergence of novel technologies, including NFTs.[160] It is here that Locke's Natural Right Doctrine becomes evident.[161] One's natural right to the work of one's hands, self, and mind is alive and well in copyright law because rights are granted without the need for a federal registration.[162] The Natural Right Doctrine further manifests here, calling to mind the underlying principle of an author's monopoly over his sufficiently original works.[163] Acknowledging a natural right to copyright grants a fundamental protection to authors over their works irrespective of technological, societal, or legislative shifts on the matter.[164] Rebecca Tushnet, a Harvard Law professor whose scholarship focuses on copyright, stated that NFTs do not change anything from an intellectual property standpoint.[165] The sale or reproduction of an otherwise copyrighted work as an NFT does not add to or diminish the copyright of the original work.[166] This is because the NFT is not the same as the original work, but is a script of code that helps

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[157] *Supra* Section II.B.2.

[158] *See* Feist Publ'ns, Inc. v. Rural Tel. Serv. Co., 499 U.S. 340 (1991); 17 U.S.C. § 102.

[159] *Supra* Section II.A.2; 17 U.S.C. § 102.

[160] Courtney Majocha, *Memes for Sale? Making sense of NFTs*, HARV. L. TODAY (May 19, 2021), https://today.law.harvard.edu/memes-for-sale-making-sense-of-nfts/.

[161] *Supra* Section II.A.1.

[162] 17 U.S.C. § 408.

[163] *See* May & Cooper, *supra* note 18, at 3 (citing FEDERALIST NO. 43 (James Madison)); *see also* FEDERALIST NO. 43 (James Madison); U.S. CONST. art. I, § 8, cl. 8; Locke, *supra* note 5 at 111–12; 2 WILLIAM BLACKSTONE, COMMENTARIES *405–06; *Supra* Section II.A.1.

[164] *See* May & Cooper, *supra* note 18 at 3 (citing FEDERALIST NO. 43 (James Madison)).

[165] Majocha, *supra* note 160.

[166] *Id.*

identify the source of the work on a blockchain.[167] In the absence of an exception like fair use or a signed copyright transfer agreement, the author of a work will retain a monopoly over the original work.[168] The unauthorized use by another, even as an NFT, constitutes an infringement of the author's rights.[169] Thus, authors need not worry that NFTs and digital markets will somehow undermine the protection of their works. Any copyright protection of an NFT would lie only in the token's code, not the work that it authenticates.

However, the separation of the protectability of works of authorship from the NFTs attached to them raises the second question this Comment seeks to answer: can the NFT itself receive copyright protection? This question is not an idle one. Authors who mint their digital works as an NFT most commonly do so by uploading their work on a digital marketplace that mints a token to embed in the work.[170] If NFTs are copyright protectable, there are two potential owners of the code: (1) the author of the work the NFT is attached to and (2) the person coding the NFT. There would, of course, be no issue if the author of the NFT code and the author of the original work were the same person. But what happens when the work and NFT are created by different authors? If copyright is extended to an NFT and vests in the coder, does the artist infringe the coder's copyright if they sell the NFT on a different marketplace than the one the NFT was coded for? Must the artist obtain an express license to use the code, or is such a license implied? If a license is implied, what is its extent? As NFTs continue to dominate the digital art realm, artists will undoubtedly run into these issues, and whether NFTs are copyright protectable will be the principal question courts must answer as litigation emerges.

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[167] Chohan, *supra* note 94, at 2–3.

[168] Majocha, *supra* note 160.

[169] *Id.*

[170] *Supra* Section II.B.2.a.

B. *The Merger Doctrine, Computer Code, and the Effects of* Google v. Oracle

For an NFT to gain copyright protection, the NFT must meet the same elements as every other copyrighted work. Thus, the Copyright Act and subsequent case law provide this framework. An NFT must be an original work of authorship that is both fixed in a tangible medium and human readable.[171] The application of these elements will demonstrate that NFTs are not protectable, but issues surrounding the protectability of computer code generally must first be examined.

Congress has long acknowledged that a literary work under 17 U.S.C. § 102 "includes computer data bases, and computer programs to the extent that they incorporate authorship in the programmer's expression of original ideas, as distinguished from the ideas themselves."[172] *Altai* confirmed that the literal elements of computer code are protectable and that even the non-literal elements—those elements of the code's expression that are not reduced to written code—can be protectable.[173] Having established that NFTs are computer code for the purposes of copyright protection, the tokens must meet Congress's requirement of originality.[174] Ultimately, this idea/expression dichotomy is the rock upon which NFTs will break.

1. The Merger Doctrine

In analyzing the originality of a work, the expression of the work's idea must be sufficiently distinct from the idea itself.[175] *Herbert Rosenthal Jewelry Corp. v. Kalpakian* extended the shadow cast by decisions like *Feist* and *Baker v. Selden* when it established another crucial limitation on copyright protection.[176] This string of U.S. case law led to copyright's Merger Doctrine,

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[171] 17 U.S.C. § 102.

[172] H.R. REP. NO. 94-1476, at 54 (1976), *as reprinted in* 1976 U.S.C.C.A.N. 5659, 5667.

[173] Comput. Assocs. Int'l v. Altai, Inc., 982 F.2d 693, 702 (2nd Cir. 1992).

[174] Emmanuel et al., *supra* note 98; H.R. REP. NO. 94-1476.

[175] *See generally* Feist Publ'ns, Inc. v. Rural Tel. Serv. Co., 499 U.S. 340 (1991).

[176] *See* 17 U.S.C. § 102; *Feist*, 499 U.S. 340; Baker v. Selden, 101 U.S. 99 (1880); Herbert Rosenthal Jewelry Corp. v. Kalpakian, 446 F.2d 738 (9th Cir. 1971).

which the Ninth Circuit outlined in *Kalpakian*.[177] Essentially, a work fails the originality requirement for protectability when the expression of that work is indistinguishable from the work's idea or function.[178]

Works that are only capable of being expressed in one way[179] or that constitute the unalterable expression of an idea, such that protecting the work would foreclose alternative expressions of that idea, are barred from protection by the Merger Doctrine.[180] The Ninth Circuit, in *Kalpakian*, concluded that "[w]hen the 'idea' and its 'expression' are thus inseparable, copying the 'expression' will not be barred, since protecting the 'expression' in such circumstances would confer a monopoly of the 'idea' upon the copyright owner free of . . . conditions and limitations . . . ."[181] The Merger Doctrine derives from this idea/expression dichotomy and can be seen as a descendant of the blank form doctrine first established in *Baker*.[182] Ultimately, the Merger Doctrine recognizes a limit to an author's natural right to a monopoly over their work when that work's expression threatens others' abilities to create unique expressions to the same idea.[183] The merger limitation recognizes the boundary between an author's natural rights and the need to maintain the Constitution's objective of promoting science and useful arts, because a monopoly over expressions that are indistinguishable from the idea would effectively confer a monopoly over the idea or art as a whole.[184]

However, the Merger Doctrine raised a major question: when would inherently utilitarian expressions like computer code separate from the function of their idea? The Second Circuit answered this question in *Altai*.[185]

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[177] *Kalpakian*, 446 F.2d at 741–42.

[178] *Id.*

[179] *Id.* at 742.

[180] Veeck v. S. Bldg. Code Cong. Int'l, 293 F.3d 791, 801 (5th Cir. 2002).

[181] *See Kalpakian*, 446 F.2d at 742.

[182] *See* Baker v. Selden, 101 U.S. 99, 105, 107 (1880) (explaining that, while the expression of an art in a book is subject to copyright protection, forms found within the book that allow for the practice of the art are not protectable).

[183] *Kalpakian*, 446 F.2d at 742.

[184] *Id.*; U.S. CONST. art. I, § 8, cl. 8. *See generally supra* Section II.

[185] Comput. Assocs. Int'l, Inc. v. Altai, Inc., 982 F.2d 693 (2nd Cir. 1992).

First, the court affirmed that a programmer's expression of the code is the only protectable element of computer code under copyright law, as opposed to the processes or methods that the program embodies.[186] The court then recognized the difficulty in separating idea from expression, and it returned to the reasoning in *Baker* for guidance.[187] The Second Circuit acknowledged that computer code and the accounting form in *Baker* were peripherally analogous "[t]o the extent that an accounting text and a computer program are both 'a set of statements or instructions . . . to bring about a certain result.'"[188] Yet the court ultimately affirmed that computer code, unlike the accounting form, is protectable and established the AFC test:

> [A] court would first break down the allegedly infringed program into its constituent structural parts. Then, by examining each of these parts for such things as incorporated ideas, expression that is necessarily incidental to those ideas, and elements that are taken from the public domain, a court would then be able to sift out all non-protectable material. Left with a kernel, or possibly kernels, of creative expression after following this process of elimination, the court's last step would be to compare this material with the structure of an allegedly infringing program. The result of this comparison will determine whether the protectable elements of the programs at issue are substantially similar so as to warrant a finding of infringement.[189]

The Second Circuit, having established protectability, attempted to offer a more tailored test for examining which elements of a computer program are protectable. The court in *Altai* offered the AFC test to determine whether

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[186] *Id.* at 703. It is worth noting that the processes or methods embodied in computer programs can be protected by patent law.

[187] *Id.* at 704.

[188] *Id.* (quoting 17 U.S.C. § 101).

[189] *Id.* at 706.

non-literal elements of two programs were substantially similar.[190] As discussed in Part II, this test incorporated well-established copyright doctrines like merger and *scenes a faire*.[191] The court acknowledged that "computer technology is a dynamic field which can quickly outpace judicial decision[ ]making."[192] *Altai* performed a marriage between the foundational tenets of the Merger Doctrine and an analysis distinctly tailored to computer programming. Accordingly, the AFC test has become a guiding light in darkness cast by evolving technologies, granting the ability to distinguish between protectable expressions in software and those elements which are dictated by a purely utilitarian function.

2. A Wreck on the Highway: Problems with Merger and Computer Code

For most of the 2010s, the Supreme Court presided over a single lawsuit that implicated the tumultuous relationship between copyright and computer code, including the question left unanswered in *Altai*. This suit resulted in the Supreme Court's controversial decision in *Google LLC v. Oracle America, Inc.* late in 2021.[193] Unfortunately, the case was wrought with problems affecting the protectability of computer code, including NFTs, which may only be recognized by addressing the dispute in both the Federal Circuit[194] and Supreme Court[195] decisions.

a. *Oracle I*: The Federal Circuit decision

In 2014, the Federal Circuit presided over the action in which Oracle America, Inc. sued Google.[196] Oracle created numerous API packages using their Java Standard Edition (Java SE) platform.[197] Oracle alleged that Google infringed its copyright to Java SE and the API packages by copying the

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[190] *See id.* at 706–09; *supra* Section II.B.

[191] *Altai*, 982 F.2d at 706.

[192] *Id.*

[193] Google LLC v. Oracle Am., Inc. (*Oracle II*), 141 S. Ct. 1183 (2021).

[194] Oracle Am., Inc. v. Google Inc. (*Oracle I*), 750 F.3d 1339 (Fed. Cir. 2014).

[195] *Oracle II*, 141 S. Ct. 1183.

[196] *Oracle I*, 750 F.3d at 1347.

[197] *Id.*

declaring source code verbatim from each of the relevant API packages for use in Google's Android software.[198] The Federal Circuit took care to distinguish that the Java programming language was free and open for anyone to use.[199] The Java API packages written by Oracle, not the language itself, were at issue.[200] Instead of writing its own API, Google copied Oracle's API packages after licensing negotiations between the two companies fell through.[201] The Federal Circuit reversed a district court ruling in favor of Google, holding that Oracle's API packages were subject to copyright protection and that Google infringed by copying the packages.[202]

To understand how the court arrived at this conclusion, the relevant technology must be examined. The Federal Circuit described API packages as programs that "allow programmers to use . . . prewritten code to build certain functions into their own programs, rather than write their own code to perform those functions from scratch."[203] The court ultimately reviewed whether the sequence, structure, and organization (SSO) and code of Oracle's API packages were protectable.[204] To determine protectability, the court examined the nature of APIs. API packages contain thousands of individual elements and are comprised of two types of source code:[205] declaring code and implementing code.[206] Declaring code is an expression "that introduces the method body and specifies very precisely the inputs, name and other functionality."[207] Implementing code provides the computer with "step-by-

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[198] *Id.* at 1350–51.

[199] *Id.* at 1353.

[200] *Id.*

[201] *Id.*

[202] Oracle Am., Inc. v. Google Inc. (*Oracle I*), 750 F.3d 1339, 1381 (Fed. Cir. 2014).

[203] *Id.* at 1349.

[204] *See id.* at 1339.

[205] Source codes are programming statements "created by a programmer with a text editor or a visual programming tool and then saved in a file." *Source Code and Object Code*, UNIV. OF WASH., https://www.washington.edu/research/glossary/source-code-and-object-code/ (last visited Sept. 22, 2022).

[206] *Oracle I*, 750 F.3d at 1349.

[207] *Id.*

step instructions for carrying out the declared function."[208] The declaring code commands the computer to execute the implementing code.[209]

Google copied both the declaring code and the SSO of Oracle's API packages.[210] To analyze the protectability of the replicated elements, the court looked to the ruling in *Altai*, which stated that the literal and non-literal elements of computer code can be protectable.[211] Here, the court found that Oracle's literal elements (the declaring code) and non-literal elements (the SSO) were subject to copyright protection.[212] The Federal Circuit applied *Altai*'s AFC test to the SSO of Oracle's API to determine protectability[213] and found that while Oracle had no right to the organizational structure in the abstract, the company had a right to the "*particular* way of naming and organizing each of the 37 Java API packages."[214]

The court then analyzed whether the Merger Doctrine applied to Oracle's declaring code. The Federal Circuit accepted Oracle's argument that merger "cannot bar copyright protection for any lines of declaring source code unless Sun/Oracle had only one way, or a limited number of ways, to write them."[215] The court then found that Oracle had "unlimited options as to the selection and arrangement of the 7000 lines Google copied."[216] Therefore, the Federal Circuit found that the Merger Doctrine could not apply to Oracle's declaring code because there were numerous other ways to express the code and achieve the same function.[217] The court further recognized that, while potentially applicable to a fair use analysis, concerns regarding whether precise replication of Oracle's code was necessary for interoperability with

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[208] *Id.*

[209] *Id.*

[210] *Id.* at 1350–51.

[211] *Id.* at 1355 (citing Comput. Assocs. Int'l, Inc. v. Altai, Inc., 982 F.2d 693, 702 (1992)).

[212] Oracle Am., Inc. v. Google Inc. (*Oracle I*), 750 F.3d 1339, 1348, 1356 (Fed. Cir. 2014).

[213] *Id.* at 1357 (citing *Altai*, 982 F.2d at 706).

[214] *Id.* at 1367.

[215] *Id.* at 1361.

[216] *Id.* (quoting Brief of Plaintiff-Appellant at 50, Oracle Am., Inc. v. Google Inc., 750 F.3d 1339 (Fed. Cir. 2014) (No. 13-1021)).

[217] *Id.* at 1361.

Google's platforms were irrelevant when analyzing whether the code was copyright protectable.[218] Therefore, the Federal Circuit found that Oracle's API packages were subject to copyright protection but remanded the case to resolve whether Google's actions constituted fair use.[219]

b. Oracle II: A new Supreme Court decision and Justice Thomas' dissent

In 2021, Google appealed to the Supreme Court.[220] On appeal, Google asked the Court to consider two issues: whether Oracle's code was protectable and, if so, whether Google's copying of the code constituted a "fair use."[221] Arguendo, the Supreme Court forewent analyzing protectability and only examined whether Google engaged in a fair use in the event Oracle's code was protectable.[222] The Court held that Google's replication of Oracle's declaring code and SSO was a fair use under 17 U.S.C. § 107.[223] The Supreme Court's finding of fair use established a troubling, arguably erroneous precedent that could threaten the ability of software companies to generate sustainable business by restricting the ability to stop consumers from copying their product.[224] However, this Comment is distinctly concerned with analyzing whether certain types of computer code are protectable.

The central problem of the Supreme Court's decision was its refusal to address whether Oracle's code was, in fact, protectable. In his dissent, Justice Clarence Thomas admonished the Court for engaging in a fair use analysis

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[218] Oracle Am., Inc. v. Google Inc. (*Oracle I*), 750 F.3d 1339, 1368 (Fed. Cir. 2014).

[219] *Id.* at 1381.

[220] Google LLC v. Oracle Am., Inc. (*Oracle II*), 141 S. Ct. 1183 (2021).

[221] *Id.* at 1197.

[222] *Id.*

[223] *Id.*; 17 U.S.C. § 107.

[224] For an overview of some of the issues with the Supreme Court's fair use analysis, see Justice Thomas's dissent from the majority opinion and the following blog from the Copyright Alliance. *Oracle II*, 141 S. Ct. at 1214–20 (Thomas, J., dissenting); Kevin Madigan, *Second Circuit Resoundingly Rejects Broad Application of Google v. Oracle*, COPYRIGHT ALL. (Aug. 31, 2021), https://copyrightalliance.org/second-circuit-rejects-application-google-oracle/.

before determining the level of protection given to Oracle's API.[225] Justice Thomas acknowledged that whether Oracle's declaring code was protectable should have been central to the majority's analysis since a fair use defense only applies to those uses that would otherwise be infringing against a protected work.[226] Justice Thomas recognized that an initial protectability analysis is the paramount prerequisite in determining the extent of copyright protection for computer code.[227]

Justice Thomas ultimately agreed with the Federal Circuit's decision, stating that the Copyright Act expressly protects computer code, including Oracle's declaring code.[228] Justice Thomas determined that while 17 U.S.C. § 102's general elements of copyright protection are sufficient to establish protectability for the declaring code, the Copyright Act explicitly covers the type of code in question.[229] The Copyright Act defines a computer program as "a set of statements or instructions to be used *directly or indirectly* in a computer in order to bring about a certain result."[230] Justice Thomas asserted that, while implementing code directly commands the computer to execute a function, declaring code indirectly commands the computer by incorporating the implementing code.[231] Further, Justice Thomas contended that "the phrase 'method of operation' in § 102(b) does not remove protection from declaring code simply because it is functional."[232] Justice Thomas stated that "method of operation" refers to the ideas and functions implemented through computer code rather than the literal expression of the code itself.[233] While Oracle could not copyright the idea of utilizing declaring

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[225] *Oracle II*, 141 S. Ct. at 1211 (Thomas, J., dissenting).

[226] *Id.*; 17 U.S.C. § 107.

[227] *Oracle II*, 141 S. Ct. at 1211 (Thomas, J., dissenting).

[228] *Id.* at 1212 (Thomas, J., dissenting).

[229] *Id.*; 17 U.S.C. §§ 101, 102.

[230] 17 U.S.C. § 101 (emphasis added).

[231] *Oracle II*, 141 S. Ct. at 1213 (Thomas, J., dissenting).

[232] *Id.*

[233] *Id.*

code, it could copyright the expression of the specific declaring code it writes for its API packages.[234]

Justice Thomas used the same analysis of § 102(b) in rejecting Google's merger argument.[235] Even if merger existed in this context, Google admitted that that it would apply through § 102(b).[236] Thomas stated that while "there may have been only one way for Google to copy the lines of declaring code, . . . there were innumerable ways for Oracle to write them."[237] Justice Thomas's rejection of Google's merger argument and establishment of protectability for Oracle's declaring code solved two problems the majority opinion created. First and not within the scope of this Comment, Justice Thomas, by first analyzing protectability, exposed the error in the majority's fair use determination.[238] Second and most important to this Comment, his dissent positively affirmed the boundaries set by the Federal Circuit regarding the application of merger to computer code.[239] Ultimately, the majority's refusal to decide protectability left the Federal Circuit's and Justice Thomas's analyses unrejected but in a state of limbo. The history of the Merger Doctrine and the analyses of both Justice Thomas and the Federal Circuit have laid the groundwork for properly examining whether NFTs are subject to copyright protection.

IV. NO SURRENDER: THE MERGER DOCTRINE BARS PROTECTION FOR NFTS

Having acknowledged the murky relationship between the Merger Doctrine and computer code, the principal question of this Comment remains: Are NFTs subject to copyright protection? In short, the answer is no. As litigation surrounding NFTs and copyright begins to emerge, courts

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[234] *Id.*

[235] *Id.* at 1213–14.

[236] *Id.* at 1214.

[237] Google LLC v. Oracle Am., Inc. (*Oracle II*), 141 S. Ct. 1183, 1214 (2021) (Thomas, J., dissenting).

[238] *Id.* at 1210–20.

[239] *Id.* at 1213–14; *see also Oracle Am., Inc. v. Google LLC*, 886 F.3d 1179, 1210-11 (Fed. Cir. 2018).

are destined to answer this question. Precedent stands well-equipped to guide decisions as courts begin to preside over NFT-related copyright litigation.[240]

The protectability analysis ignored by the *Oracle II* majority must be applied to NFTs. The core problem in determining protectability for NFTs, like any computer code, is determining whether the token is sufficiently original under 17 U.S.C. § 102.[241] As this Comment addressed in Section III, an NFT is fundamentally different from the work it identifies on a blockchain.[242] The works attached to NFTs are often works of authorship copyrightable under § 102.[243] NFTs, rather, are computer codes subject to protectability as a literary work.[244] The Federal Circuit in *Oracle I* and Justice Thomas in his *Oracle II* dissent offered a sound and unrejected basis for analyzing which computer code elements are protectable.[245]

Per *Kalpakian* and *Baker*, an NFT's expression must be sufficiently separate from the idea it expresses to be protected under copyright law.[246] An

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[240] For lawsuits regarding NFTs and intellectual property rights, see Complaint, Miramax, LLC v. Tarantino, No. 2:21-cv-08979 (C.D. Cal. Nov. 16, 2021); Defendant's Reply to Plaintiff's Opposition to Motion for Judgment on the Pleadings; Memorandum of Points and Authorities in Support, Miramax, LLC v. Tarantino, No. 2:21-cv-08979-FMO-JC (C.D. Cal. July 21, 2022); Complaint, Roc-A-Fella Records, Inc. v. Dash, No. 1:21-cv-5411 (S.D.N.Y. June 18, 2021); *see also* James Felton, *NFT Group Buys Copy of Dune for €2.66 Million, Believing It Gives Them Copyright*, IFL SCIENCE (Jan. 17, 2022, 7:18 AM), https://www.iflscience.com/nft-group-buys-copy-of-dune-for-266-million-believing-it-gives-them-copyright-62254 (showing confusion about what rights NFTs convey).

[241] 17 U.S.C. § 102.

[242] *Supra* Section III.A; *supra* note 160.

[243] 17 U.S.C. § 102(a) (listing copyrightable works of authorship); Andres Guadamuz, *Non-Fungible Tokens (NFTs) and Copyright*, WORLD INTELL. PROP. ORG.: WIPO MAG. (Dec. 2021), https://www.wipo.int/wipo_magazine/en/2021/04/article_0007.html.

[244] H.R. REP. NO. 94-1476, at 53–54 (1976); Oracle Am., Inc. v. Google Inc. (*Oracle I*), 750 F.3d 1339, 1354 (Fed. Cir. 2014); *see also* 17 U.S.C. §§ 101–02.

[245] *See Oracle I*, 750 F.3d 1339; Google LLC v. Oracle Am., Inc. (*Oracle II*), 141 S. Ct. 1183, 1214–20 (2021) (Thomas, J., dissenting); *supra* Section III.B.2.b.

[246] Herbert Rosenthal Jewelry Corp. v. Kalpakian, 446 F.2d 738, 742 (9th Cir. 1971); Baker v. Selden, 101 U.S. 99, 105, 107 (1880); *see also* Veeck v. S. Bldg. Code Cong. Int'l, 293 F.3d 791, 801 (5th Cir. 2002) (stating that the Merger Doctrine applies and excludes copyright protection when an idea can only be expressed one way).

NFT is a digital token comprised of an irreplicable line of code.[247] In computer code, the idea of the work is its abstracted purpose or function—the elements that are exclusively utilitarian or otherwise unprotectable.[248] An NFT functions to authenticate the work to which the NFT attaches. Thus, the idea of an NFT is its function as a unique authenticator that operates on a blockchain, but its expression embodies the specific irreplicable token compatible with the relevant blockchain. This sets the stage for a proper analysis of NFT originality.

A. *The Expression of NFT Code Is Indistinguishable From Its Function*

The key to applying the protectability analysis is to first remember that NFTs are not API. Unlike Oracle's declaring code, which was part of an API package,[249] an NFT is not part of the ERC-721 API.[250] Rather, an NFT is a separate digital token minted for compatibility with the ERC-721 standard to identify smart contracts and be interoperable on blockchains built with ERC-721 API.[251] Perhaps the easiest way to distinguish NFTs from an API is to compare NFTs to a function that works closely with an API: the API key. An API key is a "simple encrypted string that identifies an application without any principal."[252] Essentially, the API key is used to authenticate a user or the API itself.[253] Like the API key, NFTs facilitate the same function for users and contracts on a blockchain.

This is the paramount distinction between a protectability analysis for NFTs and Justice Thomas's analysis in *Oracle II*. Justice Thomas claimed that

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[247] Emmanuel & Punia, *supra* note 98.

[248] Comput. Assocs. Int'l, Inc. v. Altai, Inc., 982 F.2d 693, 707–710. (2nd Cir. 1992).

[249] *Oracle I*, 750 F.3d at 1347–49.

[250] *See* Entriken et al., *supra* note 104.

[251] *Supra* Section II.B.2.a.

[252] *API Keys*, ENGATI, https://www.engati.com/glossary/api-keys (last visited Oct. 11, 2022); *see Authenticate Using API Keys*, GOOGLE CLOUD, https://cloud.google.com/docs/authentication/api-keys (last visited Oct. 11, 2022).

[253] *See What Is an API Key?*, FORTINET, https://www.fortinet.com/resources/cyberglossary/api-key (last visited Oct. 11, 2022).

the Court merely assumed the declaring code in *Oracle II* was protectable.[254] He thought that while there may only be one method of copying the code, there exists an infinite number of ways to write declaring code and achieve the same function.[255] This essentially meant that declaring code was protectable because the expression of the code was sufficiently separate from its idea or function that granting protection over Oracle's declaring code would not grant Oracle a monopoly over all declaring code presently written or unwritten.

The same cannot be said for NFTs. An NFT, by its nature, must be a unique line of irreplicable and non-fungible code so that it may authenticate its attached work on a compatible ERC-721 blockchain.[256] Not only must the token be blockchain compatible, it must also be compatible with the marketplace where the tokens are minted in order to allow interoperability between the token, the marketplace, and the blockchain.[257] This ensures that, to function, an NFT must be expressed in only one way.

Here, the Merger Doctrine applies. Whereas declaring code can be written in many different ways to achieve the same function in an API, an NFT is limited to its singular expression. While many NFTs can exist simultaneously, each is irreplicable and non-fungible, designed that way for the sole purpose of authenticating the respective work to which each NFT attaches.[258] Computer code is not protectable under the Merger Doctrine when there is "only one way, or a limited number of ways, to" express that code, such that the function of the code is indistinguishable from its expression.[259] While someone could copy the digital art or image to which the NFT attaches, they cannot copy the NFT code since it is secured on the

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[254] Google LLC v. Oracle Am., Inc. (*Oracle II*), 141 S. Ct. 1183, 1214 (2021) (Thomas, J., dissenting).

[255] *Id.*

[256] *See supra* Section II.B.2.

[257] *See* Entriken et al., *supra* note 104. *See generally supra* Section II.B.2.a (explaining NFT "minting" and the ERC-721 programming standard).

[258] *See supra* Section II.B.2.

[259] Oracle Am., Inc. v. Google Inc. (*Oracle I*), 750 F.3d 1339, 1361 (Fed. Cir. 2014).

blockchain.[260] A person could, in theory, mint the copied image as a new NFT and smart contract. This allows the token to serve its function as an authenticator for the works it identifies, creating a digital signature of ownership on the blockchain.[261]

Yet the very nature of an NFT bars it from copyright protection. Because each NFT must be irreplicable to function as an authenticator, each NFT is limited to its singular expression. If copyright protection extended to NFTs, the author of the code would essentially gain a monopoly, not only over the individual code, but over the idea of authenticating code on that blockchain. However, the Merger Doctrine exists to prevent the extension of monopolies to the functions output by expressions.[262] Unlike Oracle's declaring code, which could be expressed in many ways and achieve the same end,[263] an NFT would either become an entirely new token or fail to be a functional NFT at all if it was minted differently or not minted to the ERC-721 standard.[264]

Because the NFT cannot be written in more than one way without losing its purpose, a grant of copyright protection would provide the author of any given NFT a monopoly over the code's authenticating function as well. Further, NFTs are single strings of code, and the Copyright Office has affirmed that short phrases, including other short form code like URLs, are not protectable.[265] Because the function of an NFT is indistinguishable from its expression, the Merger Doctrine bars NFTs from receiving copyright protection.

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[260] *See supra* Section II.B.2; Aaron Mak, *How to Troll an NFT Owner*, SLATE (Nov. 18, 2021, 2:08 PM), https://slate.com/technology/2021/11/nft-image-ownership-right-clicking-saving-copying-trolling.html.

[261] Emmanuel & Punia, *supra* note 98.

[262] *See* Comput. Assocs. Int'l, Inc. v. Altai, Inc., 982 F.2d 693, 706–08 (2nd Cir. 1992). *See generally* 17 U.S.C. § 102(b); Feist Publ'ns, Inc. v. Rural Tel. Serv. Co., 499 U.S. 340 (1991); Baker v. Selden, 101 U.S. 99 (1880); Herbert Rosenthal Jewelry Corp. v. Kalpakian, 446 F.2d 738, 742 (9th Cir. 1971) (establishing the Merger Doctrine).

[263] Google LLC v. Oracle Am., Inc. (*Oracle II*), 141 S. Ct. 1183, 1212–14 (2021) (Thomas, J., dissenting).

[264] *Supra* Section II.B.2.

[265] U.S. COPYRIGHT OFF., CIRCULAR 33: WORKS NOT PROTECTED BY COPYRIGHT 2–3 (2021).

B. *The Natural Right Doctrine Aligns with a Merger Bar on NFTs*

Application of the Merger Doctrine to bar protectability for NFTs is further aligned with the Natural Right Doctrine underlying copyright law. An author earns a natural right to copyright protection at the moment they create a sufficiently original work that is "fixed in a[] tangible medium of expression."[266] This right vests without the need for government confirmation.[267] However, an author only retains a natural right to the protection of works that are sufficiently original.[268] The creation of a work that is necessary and obvious to execute the purpose it serves, such that the work cannot be expressed differently without losing that purpose, is not original under the Merger Doctrine.[269] This lack of originality stems from the work's inability to have an expression distinct from its function,[270] and an author does not have a natural right to works that he did not sufficiently make original and independent of the work's intended purpose.[271]

It is important to remember that there are limitations on an author's natural right to a monopoly over their original work.[272] Rather than create such a limitation, the Merger Doctrine identifies an intrinsic boundary between the natural right and that which is common to all.[273] Merger protects the ideas and functions common to all people from being monopolized by any single author.[274] This principle is foundational to the Natural Right Doctrine. John Locke stated:

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[266] 17 U.S.C. § 102(a); *see* LOCKE, *supra* note 5, at 111–12.

[267] 17 U.S.C. § 408(a). Section 408(a) establishes that one owns a copyright prior to registration as one is already deemed the owner of a copyright when granted the option to apply for registration. *Id.* ("[T]he owner of copyright or of any exclusive right in the work may obtain registration of the copyright claim").

[268] 17 U.S.C. § 102(a); *see supra* Section II.A.

[269] *See* Oracle Am., Inc. v. Google Inc. (*Oracle I*), 750 F.3d 1339, 1361 (Fed. Cir. 2014).

[270] *See* 17 U.S.C. § 102(b); Herbert Rosenthal Jewelry Corp. v. Kalpakian, 446 F.2d 738, 742 (9th Cir. 1971).

[271] *Supra* Section II.A.1.; *see* LOCKE, *supra* note 5, at 111–12; THE FEDERALIST NO. 43, at 1 (James Madison) (The Avalon Project ed., 2008); *Oracle I*, 750 F.3d at 1361.

[272] *See* LOCKE, *supra* note 5, at 111–12.

[273] *See id.*

[274] *See id.*; 17 U.S.C. § 102(b).

> Whatsoever then he removes out of the state that nature hath provided, and left it in, he hath mixed his labour with, and joined to it something that is his own, and thereby makes it his property. It being by him removed from the common state nature hath placed it in, it hath by this labour something annexed to it that excludes the common right of other men. For this labour being the unquestionable property of the labourer, no man but he can have a right to what that is once joined to, at least where there is enough, and as good, left in common for others.[275]

Locke acknowledged that a natural right to property only vests in those independent creations that people mix with their labor such that those creations are removed from their natural, common state.[276] The Merger Doctrine affirms Locke's rule by barring protection for those expressions that fail to become sufficiently separate from the ideas or functions common to all. As this Comment has demonstrated, NFTs should be denied copyright protection via the Merger Doctrine.[277] Therefore, because the tokens lack the sufficient originality to be distinct from the idea they express, NFTs fall outside the scope of Locke's Natural Right Doctrine.

V. CONCLUSION

While NFTs are functionally distinct from the works they authenticate, they are not copyright protectable because the function and idea they serve are so connected to their expression that the Merger Doctrine prohibits their protection. Though Justice Thomas and the Federal Circuit championed a protectability analysis for computer code backed by over a century of precedent, the Supreme Court fell short of fully affirming that analysis by

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[275] LOCKE, *supra* note 5, at 111–12.

[276] *Id.*

[277] *Supra* Section IV.A.

refusing to rule on the issue.[278] Regardless, the Merger Doctrine should bar NFTs from receiving copyright protection because the expression of NFT code is indistinguishably tied to the function of non-fungible authentication on a blockchain. There is no natural right to hold a monopoly over works that are not separate from a state common to all.[279]

If man cannot sufficiently express works such that they are distinct from his ideas, no copyright protection may vest in those works. There is a road on the map of history that winds on indefinitely, and upon that road are the milestones of human progress and ingenuity. Those milestones are protected by the rights that, when furthered by the mixing of one's mind and labor, vest to protect those original expressions that captivate the soul and drive us forward. While the standard for originality may be attainable, it is not met without effort, and NFTs fail to satisfy originality under the Merger Doctrine. So, as The Boss once wrote, "you've got to learn to live with what you can't rise above."[280]

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[278] Google LLC v. Oracle Am., Inc. (*Oracle II*), 141 S. Ct. 1183, 1214–20 (2021) (Thomas, J., dissenting); *supra* Section III.B.2.b; *see* Oracle Am., Inc. v. Google Inc. (*Oracle I*), 750 F.3d 1339 (Fed. Cir. 2014).

[279] *See* THE FEDERALIST NO. 43, at 1 (James Madison) (The Avalon Project ed., 2008); U.S. CONST. art. I § 8 cl. 8; LOCKE, *supra* note 5, at 111–12; 2 WILLIAM BLACKSTONE, COMMENTARIES *405–06; *Supra* Section II.A.1.

[280] BRUCE SPRINGSTEEN, *Tunnel of Love, on* TUNNEL OF LOVE, (Columbia Recs. 1987).