ARTIFICIAL INTELLIGENCE: REDEFINING INTELLECTUAL PROPERTY FRAMEWORKS AND ETHICAL BOUNDARIES IN AN ERA OF INNOVATION

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ABSTRACT

The rapid integration of artificial intelligence (AI) across diverse sectors, from creative industries to employment, raises questions about whether our current intellectual property (IP) laws can govern and regulate AI-generated content. Copyright and patent law are two IP law frameworks designed to protect creative works and inventions made by humans. As AI is being used to create new works and inventions, the IP law framework faces challenges in ownership and eligibility for legal protection. In Thaler v Hirshfeld *(2021), the court ruled that AI cannot be recognized as an inventor under the Patent Act. This decision highlights the hesitation to protect AI-generated works and the rigidity in our human-based IP law frameworks. From hiring decisions to pornographic image manipulation, AI also poses ethical and privacy concerns. The use of AI in algorithmic decision-making systems and deepfakes exposes how these technologies can be used to discriminate against or manipulate individuals. While laws have been introduced to protect individuals against AI-based discrimination and deepfakes, there is still a need for cohesive federal law to safeguard people from systematic bias and those who employ AI to cause harm.*

Table of Contents

I. Introduction

Artificial Intelligence ("AI") is no longer a futuristic concept.[1] Now, it is reshaping how individuals create and innovate.[2] At its core, AI is developing intelligent machines capable of replicating human behaviors such as learning, problem-solving, and decision-making.[3] Generative AI ("GenAI") is a revolutionary subset of AI that includes systems like ChatGPT or Google Gemini. These systems process large amounts of data ranging from online text to images, which will then be used to generate creative outputs in the form of writing or pictures.[4] Generative AI makes it easier to bring ideas to life. Comprehensive essays, artistic images, or inventions can be quickly created from a simple prompt. However, as the capabilities of AI systems advance, it is clear that they begin to challenge the intellectual property ("IP") law framework.

Intellectual property law is meant to safeguard human creativity and innovation. The Copyright Act of 1976 protects "original works of authorship fixed in any tangible medium of expression,"[5] while the Patent

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[1] Mohammad Talha Bin Haneef, *Artificial Intelligence: The Future of Technology*, Medium (June 14, 2024) https://talhabinhaneef.medium.com/artificial-intelligence-the-future-of-technology-2cb11e4e66b0.
[2] *Id.*
[3] McKinsey & Co., *What is AI (artificial intelligence)*, McKinsey & Co. (April 3, 2024) https://www.mckinsey.com/featured-insights/mckinsey-explainers/what-is-ai.
[4] *Id.*
[5] 17 U.S.C. § 102(a) (1976).

Act grants exclusive rights to inventors of new and useful creations or improvements.[6] These statutes assume human creators and inventors. However, as GenAI becomes more readily accessible, questions regarding authorship, originality, and the parameters of legal protection arise. When a GenAI system is given an order to create a novel, illustration, or invention, who is to be considered the rightful author or inventor? Is it the human who gave the initial prompt or the AI system? These questions challenge the core principles of IP law, which were developed assuming only human inventors.

Another pressing issue for IP law and authors is how AI systems generate responses. As previously mentioned, an AI system's dataset is trained on pre-existing works, some of which may be copyrighted. Incorporating pre-existing works in AI datasets raises concerns about differentiating original AI-generated content from material that infringes upon copyrighted pieces.

Moreover, non-creative industries are also affected by AI, which introduces ethical and other legal dilemmas. The use of AI for decision-making algorithms and image-generated technologies raises concerns about discrimination, privacy, and accountability. For example,

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[6] 35 U.S.C. § 101.

an AI system could unintentionally perpetuate biases and put protected classes at a disadvantage when the datasets they are fed contain biases.[7]

Despite these challenges, this article will evaluate how our current copyright and patent law frameworks address the rise of AI in creative spaces. It will also explore where the IP law frameworks fall short and the broader ethical and legal issues that arise with AI.

II. Defining Artificial Intelligence and Intellectual Property Concepts

Artificial intelligence is an umbrella term that Stuart Russel and Peter Norvig, leading experts in the field, identify as an "intelligent agent."[8] An agent is defined as "a software system which perceives its environment through sensors and acts upon that environment through actuators."[9] Intelligence, in the context of AI, "means the ability to select an action that is expected to maximize a performance measure."[10] This encompasses tasks traditionally requiring human cognition, such as learning, reasoning, problem-solving, and critical thinking.[11] Thus, AI is a software system that

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[7] Nick Bostrom & Eliezer Yudkowsky, *The Ethics of Artificial Intelligence*, The Cambridge Handbook of Artificial Intelligence 316, (Keith Frankish & William M. Ramsey eds., 2014).

[8] Jonas, Schuett, *A Legal Definition of AI*, SRRN Elec. J. 3 (Aug. 2019), https://www.researchgate.net/publication/335600149_A_Legal_Definition_of_AI.

[9] *Id.*

[10] *Id.*

[11] McKinsey & Co., *supra* note 2.

emulates human learning, reasoning, problem-solving, and critical thinking to process large amounts of data.

AI systems that analyze data, identify patterns, and make predictions similar to how humans would use machine learning.[12] Machine learning depends on mathematical algorithms, which are human-written instructions and commands that guide the AI system in processing data, solving problems, or executing tasks.[13]

GenAI is a type of AI trained on collected human data. It uses machine learning algorithms to produce text, audio, and images that mimic styles, expressions, and patterns.[14] Additionally, sentiment analysis is used in GenAI so the system can better understand the underlying emotion of the texts, which ultimately allows it to refine its responses to produce outputs that emulate human emotion and tone.[15] These algorithms operate as the backbone of GenAI systems, dictating how the system makes decisions, learns, and produces responses.[16]

A major advancement in the field of GenAI is the development of large language models ("LLM"), such as ChatGPT, which are trained on

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[12] *Id.*

[13] *Id.*

[14] Seldon, *Generative AI vs Machine Learning*, SELDON.IO (Nov. 10, 2023), https://www.seldon.io/generative-ai-vs-machine-learning.

[15] Erik Cambria et al., eds., *A practical guide to sentiment analysis*, 49 (1st ed. 2017) (Socio-Affective Computing, vol. 5).

[16] McKinsey & Co., *supra* note 2.

collections of texts. This training enables them to predict and generate "syntactic[ally] structure[d]" and "meaningful continuations of input," effectively "combining words into human interpretable content."[17]

With these foundational concepts of AI in mind, it is crucial to explore how to explore its impact on IP law. Intellectual property law was established to promote and protect the creations of the human mind, ensuring inventors and authors had exclusive rights to their works and how their works are used.[18] Intellectual property law is violated when an unauthorized party reproduces, performs, distributes, and creates derivative works, or when they make, sell, or offer to sell a protected work or invention without proper authorization.[19] Infringement of IP rights may result in legal remedies, including injunctions, monetary damages for profit lost, and, in some cases, attorney fees, if the infringer is found guilty.[20]

Copyright and patent law serve as two important pillars of IP law. *Feist Publications, Inc. v. Rural Telephone Service Co.* (1991) upheld Article 1, Section 8 of the US Constitution in the context of copyright law,

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[17] Idan A. Blank, *What Are Large Language Models Supposed to Model?*, 27 TRENDS COGN. Sci. 987, 987-89 (Cell Press 2023).
[18] U.S. CONST. art. I, § VIII, cl. VIII.
[19] 17 U.S.C. § 501 (detailing what constitutes copyright infringement); 35 U.S.C. § 271 (defining patent infringement).
[20] *See* 17 U.S.C. §§ 502-505 (Providing remedies for copyright infringement including injunctions, damages, and attorney fees); 35 U.S.C. §§ 283–285 (outlining available remedies for patent infringement).

safeguarding works expressing originality and a "modicum of creativity".[21] In contrast, purely factual works—such as telephone directories—are excluded since they lack creative expression.[22] Protecting creative and original projects aligns with the broader purpose of copyright law, as described in *Twentieth Century Music Corp. v. Aiken* (1975)*,* which is to secure fair compensation for authors of creative works while also encouraging the creative arts in society.[23]

Patent law, by contrast, protects practical, inventive works rather than the artistic expressions safeguarded by copyright law. The creative expression in copyright law includes original written literature, paintings, or musical compositions; patent law focuses on novel, non-obvious, and useful inventions with practical applications.[24] For example, a groundbreaking medical device or a newly engineered software algorithm falls under the scope of patent law. Quintessential to patent law is the concept of the inventor—the individual, "who conceived [an] invention,"[25] that is "definite and permanent … as it will be used in practice."[26] For instance, *Diamond v. Chakrabarty* (1980) ("*Diamond*") established that

[21] Feist Publications, Inc. v. Rural Tel. Serv. Co., 499 U.S. 340, 346 (1991).
[22] *Id.*
[23] Century Music Corp. v. Aiken, 422 U.S. 151, 156 (1975).
[24] *See* Feist Publ'ns, Inc. v. Rural Tel. Serv. Co., 499 U.S. 340, 345 (1991); 35 U.S.C. § 101.
[25] W. Michael Schuster, *Artificial Intelligence and Patent Ownership*, 75 WASH. & LEE L. REV. 1945 (Fall 2018) (quoting *C.R Bard, Inc. v. M3 Sys.*, 157 F.3d 1340, 1352 (Fed. Cir. 1998)).
[26] Townsend v. Smith, 36 F.2d 292, 295 (C.C.P.A 1929).

"anything created under the sun that is made by man" could be patented,

reinforcing that patent protection extends to *human*-made inventions.[27] A

granted patent provides inventors with "exclusive right[s] to their . . .

discoveries," creating a society that incentives innovation.[28] By rewarding

technological advancements, patent law ensures that society benefits from

the fruits of *human* ingenuity.

III. The Impact of AI on Intellectual Property Law

A. AI and Copyright Law

Advancements in AI test the limits of the original assumption of

copyright law—human authorship and originality—and raise questions on

ownership, creative credit, and fairness, impacting not just aspiring

inventors but society as a whole. Traditional copyright and patent law

frameworks are challenged as AI systems generate works that can rival or

surpass human capabilities within seconds, often with minimal human

intervention. Frameworks are challenged by the way GenAI mimics human

creative output. For example, LLMs like OpenAI's GPT-3 can now generate

poems and other written works that are almost indistinguishable from

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[27] Diamond v. Chakrabarty, 447 U.S. 303, 309 (1980).
[28] U.S. Const. art. I, § VIII, cl. VIII.

human-written ones.[29] Thus, such developments question the long-standing presumption that human creativity and ingenuity are the basis of intellectual property law. According to the U.S. Copyright Office, works produced "by a machine or mere mechanical process that operates randomly or automatically without any creative input or intervention from a human author" do not qualify for copyright protection, which grants creators exclusive rights to reproduce, distribute, and display their original works.[30] Works that do not meet the threshold for copyright include resized images of existing works, converting analog to digital formats, or reducing noise in a pre-existing recording.[31] These examples suggest that minimal human intervention or mechanical alterations are insufficient to confer copyright protection. *Thaler v. Perlmutter* (2023) ("*Thaler*") directly addresses the issue of human involvement—or lack thereof—by examining whether AI can be considered an author under copyright law.[32] Dr. Stephen Thaler claimed that his AI-generated image, having no human involvement, was original and merited copyright protection.[33] Despite Thaler's claim, the court decided that human authorship is a fundamental requirement for

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[29] Gunser, M., Rahmeh, A., Köbis, N., et al., *Perception and Preference in Poetry: Biases Toward AI-Generated Poems*, 14 SCI. REP. (2024), https://www.nature.com/articles/s41598-024-76900-1.

[30] U.S. Copyright Office, COMPENDIUM OF U.S. COPYRIGHT OFFICE PRACTICES § 313.2 (3 ed. 2021); 17 U.S.C. § 106.

[31] *Id.*

[32] Thaler v. Perlmutter, 687 F. Supp. 3d 140 (D.D.C. 2023) (hereinafter *Perlmutter*).

[33] *Id.*

copyright protection under current law.[34] The court's ruling reinforces the human-centric foundation of intellectual property protection and establishes that AI-generated works created without significant human input (as the result of individuals engaging intentionally and directly with the LLM) fall outside the scope of protection.[35] However, this raises a critical question: what constitutes "enough" human involvement to change a mechanical alteration to a copyrightable piece?[36] Under current copyright law, this question has yet to be answered by the Courts.

Consider a scenario where an individual prompts an LLM to generate a story, providing input such as detailed character development, descriptions of scenery, plot twists, and other critical elements. After receiving the AI's initial output, the individual revises, edits, and continues the story themselves without additional assistance from the AI system. Would the revised work, now a blend of AI and human creativity, constitute a copyrightable work? When generated content incorporates human input, the boundary between human creativity and machine output becomes blurred. The process of revising AI-generated works to create original pieces raises an important philosophical and legal question similar to the

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[34] *Id.*

[35] *Id.*

[36] Simon Chesterman, *Good models borrow, great models steal: intellectual property right and generative AI*, 44 POLICY & SOCIETY, 23-27 (Feb. 12, 2024), https://doi.org/10.1093/polsoc/puae006.

Ship of Theseus paradox, which asks whether something remains fundamentally the same after undergoing a series of incremental changes. In our context, the question is: if AI is responsible for creating initial content but human input is heavily involved in editing, revising, and adding to that content, does this transform the AI's output into a human creation, or does the AI remain the primary "author"? One could argue that the human user should be considered the author, given their immense involvement in the creative process. But it could also be argued that AI-generated content is still based on datasets with pre-existing works, without which AI could not respond to the human prompt. Currently, there are no legal guidelines defining what level of human involvement can transform an AI-generated piece into a protectable work. While *Thaler* addressed AI-generated works with minimal human involvement[37], the ruling did not define what constitutes enough human involvement or establish a threshold for when a human's contribution is significant enough to claim authorship. By creating such a threshold, the legal system could offer greater clarity and consistency for creators navigating AI-generated works.

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[37] *Perlmutter*, 687 F. Supp. 3d at 143.

While our current frameworks struggle to address these issues, it is also crucial to understand that the question extends beyond human authorship. It involves the broader issue of originality—an essential concept in copyright law. Even when inspired by pre-existing works, human creators bring their own creativity, emotion, and decision-making to the results that are original in form and intent. This means that while existing works or concepts may inspire the creator, it is their unique expression that receives protection, as copyright law protects the *expression* of ideas, not the ideas themselves.[38]

In contrast to human creators, AI systems do not generate content from personal experience or emotion but instead rely on a dataset built using pre-existing works. The datasets then teach the AI patterns and sentence structures to help emulate and elicit human-like responses to various prompts. This reliance on vast datasets raises concerns. Since these AI systems learn from existing works, their outputs can potentially replicate the expression of copyrighted material inadvertently. As a result, the line between original and derivative content is blurred.

Complications surrounding originality and AI's reliance on existing works have led to legal challenges. In *Andersen v. Stability AI* (2023)

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[38] 17 U.S.C. § 102(a) (1976) (emphasis added).

("*Andersen*"), artists sued Stability AI for allegedly using their copyrighted works to train its artificial intelligence model without consent.[39] The plaintiffs argued that this unauthorized use of copyrighted materials resulted in copyright infringement because the outputs mirrored their artistic styles.[40]

The legal crux of the case revolves around whether AI-generated works can infringe upon the original copyrighted material if the AI system was trained on works that were scraped from the internet without the copyright holder's explicit permission.[41] Andersen argued that because AI models generate outputs that closely resemble the expressive elements of the original works, they may be classified as infringements, even if they are not identical to any single work in the training dataset.[42] In the preliminary ruling, the court acknowledged the challenges posed by such massive datasets and agreed that it was plausible that Andersen's work had been part of the training material, even if not directly identified.[43] The court also signaled that the case could proceed, with hearings scheduled late spring 2025.[44]

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[39] Andersen v. Stability AI Ltd., 700 F. Supp. 3d 853 (N.D. Cal. 2023).
[40] *Id.*
[41] *Id.*
[42] *Id.*
[43] *Id.*
[44] Andersen v. Stability AI Ltd., No. 3:23-cv-00201-WHO (N.D. Cal. filed Jan. 13, 2023), https://www.courtlistener.com/docket/66732129/andersen-v-stability-ai-ltd/.

Another key issue highlighted in the case was the relevance of Section 1202(b) of the Digital Millennium Copyright Act ("DMCA"). The Digital Millennium Act prohibits removing or altering copyright management information ("CMI")—metadata identifying a work's author, title, or copyright owner.[45] The plaintiffs alleged that the use of their works in Stability AI's training datasets stripped CMI.[46] However, the court dismissed these claims with prejudice, stating that the plaintiffs failed to meet the legal standard for showing false or removing CMI.[47] This decision presents challenges that other creators may encounter when tracking and asserting ownership over their works used in datasets, when they find that LLMs generate content that mimics their artistic expressions.

Despite the dismissal of the DMCA and CMI claims, the court denied Stability AI's motion to dismiss the Copyright Act.[48] Allowing the Copyright Act claims to proceed signals that courts may allow creators to assert copyright infringement claims even when they cannot identify how their works were used in an AI system's training dataset.[49] However, the court's

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[45] 17. U.S.C. § 1202(b).
[46] *Andersen*, 700 F. Supp. 3d 853.
[47] *Id.*
[48] *Id.*
[49] *Id.*

decisions highlight concerns over how the interest of creators integrated into AI creative processes will be balanced in future courts.[50]

For creators—artists, writers, developers, or tech innovators—*Andersen* highlights the challenges of protecting their works in an age where AI systems often rely on vast amounts of data scraped from the internet and other digital spaces. [51] These challenges include the difficulty of controlling how AI uses their work. AI systems often scrape vast amounts of data without permission or awareness of the original creators, making it difficult for creators to prevent unauthorized use or grant permission for specific purposes. Determining ownership becomes complex when AI systems generate derivative works that closely resemble the original, even when they are not always easily identifiable. The lack of transparency creates ambiguity about who holds the rights to the AI-generated content and how to compensate the original creators for their contributions fairly.

While *Andersen* highlights the challenges of enforcing copyright protection for individual works incorporated into massive training datasets, *Thaler* explores the limits of copyright eligibility for AI-generated

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[50] *Id.*

[51] *Id.*

content itself.[52] When applied to the discussion of AI and copyright law, *Thaler*, which ruled that AI-generated images do not meet the requirements for copyright protection, highlights the necessity of human creativity for copyright eligibility.[53] Conversely, the plaintiffs in *Andersen* argued that AI outputs infringed upon their copyrighted works due to their reliance on existing human-created material in their algorithms.[54] These two cases, therefore, represent complementary aspects of the ongoing challenge AI poses to intellectual property law: one addressing the use of copyrighted works in training AI systems and the other emphasizing the limits of copyright protection for purely machine-generated content.

Our current copyright framework can govern AI due to the rulings in *Andersen* and *Thaler*, but with limitations. While *Andersen* suggests a growing recognition of creators' rights in AI training data, questions remain about the scope of fair use, particularly regarding whether the data scraping involved in AI training constitutes fair use or infringement.[55] Meanwhile, *Thaler* raises uncertainty about works that are minimally influenced by human input.[56]Although our current legal framework offers a

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[52] *Perlmutter*, 687 F. Supp. 3d at 143.
[53] *Id.*
[54] Andersen, 700 F. Supp. 3d at 853.
[55] *Id.*
[56] *Perlmutter*, 687 F. Supp. 3d at 143.

foundation for governing AI, these cases highlight that while it is capable of addressing some aspects of AI-generated content, it may not fully encompass the evolving challenges presented by new technologies.

The ramifications are not limited to legal professionals alone. Every individual involved in creating, distributing, or consuming digital content could be at risk of potentially infringing on others' works when using AI, since it has become so embedded in our daily lives.

B. AI and Patent Law

Parallel to the issues in copyright law are the difficulties patent law faces in addressing the increasing role of AI in the innovation process, such as ownership and patent infringement. Given that GenAI systems use datasets consisting of human work to generate outputs, two questions concerning AI and patent law arise: Can AI be listed as an inventor, and can it create novel inventions?

The U.S. District Court of the Eastern District of Virginia, in *Thaler v Hirshfeld* (2021), decided whether an AI system could be listed as an inventor in a patent application.[57] Dr. Stephen Thaler named his AI system, Device for the Autonomous Bootstrapping of Unified Sentience, the

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[57] Thaler v. Hirshfeld, 558 F. Supp. 3d 238 (E.D. Va. 2021) (hereinafter *Hirshfeld*).

invention in a patent application.[58] The court rejected the application because only natural persons (human beings) qualify as inventors under the Patent Act.[59]

Ultimately, the court's decision was made after a close examination of the language of the Patent Act. The courts analyzed the meaning of the term "individual," which Congress uses to refer to an inventor. Congress's use of "individual" implies that an "inventor" must be a natural person. Citing the Dictionary Act, which defines "individuals" as natural persons born alive, separating them from artificial entities such as corporations or AI systems unless explicitly stated. Since Congress consistently uses the term "individual" to imply an "inventor" in the Patent Act and the Dictionary Act defines "individuals" as natural persons, then under this interpretation, inventors must be natural persons.[60]

Additionally, to prove that natural persons are "inventors," the court examined 35. U.S.C. § 115(b) (2), which provides that when executing the oath for a patent application, the "inventor" must "believe himself or herself to be the original inventor or an original joint inventor of a claimed invention in the application."[61] Though Thaler challenged the court's

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[58] *Id.*
[59] *Id.*
[60] *Id.*
[61] 35. U.S.C. § 115(b) (2).

decision on the basis that the Patent Act has not yet been applied to AI-generated inventions, the court reaffirmed that only natural persons are the "inventors".[62] *Noscitur a sociis,* a principle that dictates that words should be understood in the context of words surrounding them also helped inform the court's reasoning.[63] For example, the term individual was paired with personal pronouns, such as himself or herself, implying a human entity.[64] This reinforced Congress's intention for the term "individual" to refer exclusively to natural persons.

Thaler appealed this ruling, leading to *Thaler v. Vidal* (2022), where the federal circuit appellate court reaffirmed the district court's ruling that only natural persons are inventors.[65] The appellate court stated that it was under our own precedent that "inventor[s] must be human being[s]."[66] The cases *Univ. of Utah v. Max-Planck-Gesellschaft Zur Forderung Der Wissenschaften E.V.* (2013)[67] and *Beech Aircraft Corp. v. EDO Corp* (1993)[68]

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[62] *Hirshfeld*, 558 F. Supp. 3d at 240.

[63] *Id.*

[64] *Id*.

[65] Thaler v. Vidal, 43 F.4th 1207 (Fed. Cir. 2022) (hereinafter *Vidal*).

[66] *Id*.

[67] *See* Univ. of Utah v. Max-Planck-Gesellschaft zur Forderung der Wissenschaften E.V., 734 F.3d 1315, 1323 (Fed. Cir. 2013) ("[I]nventors must be natural persons and cannot be corporations or sovereigns.") (emphasis added).

[68] *See* Beech Aircraft Corp. v. EDO Corp*,* 990 F.2d 1237, 1248 (Fed. Cir. 1993) ("[O]nly natural persons can be inventors.").

confirmed that the intended meaning of "inventor in the Patent Act is limited to natural persons."[69]

Thaler highlights how courts still rely on human-centric principles to apply IP law to new non-human entities. Naruto v. Slater (2018) ("Naruto") addressed whether a non-human (a macaque monkey) could hold copyright over a photograph it had taken,[70] and Diamond decided on whether genetically modified organisms could be patented,[71] these cases demonstrate how the courts struggle to apply traditional legal definitions to new entities. In Naruto, the court determined that copyright law does not extend to non-human beings, reinforcing the principle that authorship is reserved for humans.[72] This decision is similar to patent law's requirement for inventors who are natural persons. On the other hand, the ruling in Diamond expanded patent law by allowing genetically modified organisms to be patented.[73] The court emphasized the necessity of human ingenuity in the creation process in their reasoning.[74] Similarly, Thaler reveals the difficulties patent law faces in adapting to how AI plays a role in innovation. Patent law, right now, does not fully address the process for

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[69] Vidal, 43 F.4th at 1210.
[70] Naruto v. Slater, 888 F.3d 418, 420 (9th Cir. 2018).
[71] Diamond, 447 U.S. at 309.
[72] Naruto, 888 F.3d at 426.
[73] Diamond, 447 U.S. at 309-10.
[74] Id.

authorship, inventorship, and ownership in cases where AI plays a significant role in creative processes.

Despite these precedents favoring a human-centered IP law framework, scholars like Ryan Abbott argue that this rigidity can be counterproductive. As Abbott highlights in *The Reasonable Robot*, a human-centric framework that creates uncertainty around ownership and protection for AI-generated inventions could discourage investment in AI-driven technologies.[75] The argument aligns with the idea that patent law *should* focus on inventiveness, whether it be a GenAI system or a human, rather than clinging to "clumsy anthropomorphism."[76] Furthermore, Abbot emphasizes that patent law, at its core, is designed to encourage new inventions but, more importantly, "generat[e] socially beneficial innovation."[77]

Moreover, the court's decision in *Thaler* also raises critical questions about compensation and ownership for AI-generated innovations. In patent law, patents are granted to human inventors, who can benefit from licensing agreements, royalties, or other forms of financial compensation.[78] However, since AI systems have been deemed unnatural persons, they,

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[75] Ryan Abbott, *The Reasonable Robot*, 10-11 (Cambridge Univ. Press 2020).
[76] *Id.*
[77] *Id.*
[78] *Id.* at 89-91.

therefore, cannot directly benefit from patent protection. Mirroring one of the challenges faced in copyright law, determining ownership of AI-generated work, or in this case, inventions. For example, are the rightful owners the developers who made the AI system or the individuals who deploy that system to generate new output? [79] To address the question of ownership and compensation in AI-generated innovations, *Thaler* offers some insights. In *Thaler*, the court ruled that AI could not be recognized as an inventor under patent law, emphasizing that patent rights are reserved for human inventors. This decision suggests that ownership of AI-generated inventions would likely belong to the human individuals or entities responsible for the deployment or development of the AI system. A similar case, *Naruto*, which dealt with the ownership of a monkey's photograph, indicates that the courts are hesitant to recognize non-human creators as legal owners.[80] Therefore, while the issue of ownership remains unresolved, the legal approach has consistently favored human developers or deployers as the rightful owners.

The conversations surrounding AI and patent law are connected to copyright law. One similar issue involves originality and infringement. The question of originality in AI-generated works, raised in the context of

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[79] *Id*. at 83.
[80] *Naruto*, 888 F.3d at 426.

copyright, also extends to patent law. If GenAI systems rely on past works and inventions, are individuals using AI truly creating new, novel inventions, or are their inventions just a recombination of pre-existing knowledge and ideas? The issue of novelty becomes more complicated as patent law is so heavily rooted in protecting *original* and useful inventions.

Another significant concern in patent law is the possibility of dishonesty in future patent applications. After *Thaler* established that AI systems cannot be listed as inventors on applications, what stops applicants from claiming they are the inventor rather than an AI system to circumvent this obstacle?[81] This could open the door for fraudulent applications where individuals misrepresent their AI-generated inventions, completely undermining the integrity of the patent system.

To protect the integrity of intellectual property protection, our current codes could further clarify how works incorporating AI will be handled in court. For example, amendments to 17 U.S.C. § 102 could explain the level of human involvement required for copyright protection, as the current language defining "original works of authorship" does not explicitly address AI-assisted creative outputs.[82] The U.S. Copyright Office has ruled that purely AI-generated works are ineligible for copyright and

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[81] *Hirshfeld*, 558 F. Supp. 3d at 240.
[82] 17 U.S.C § 102 (2021).

evaluates AI-assisted works based on whether the human contribution involves creative control over the final expression. This means that while AI-generated outputs themselves are not protected, copyright may be granted if a human significantly modifies the AI-generated work in a way that reflects independent creative judgment.[83] However, the threshold for what constitutes sufficient human creativity remains unclear, leaving uncertainty for creators who incorporate AI into their work.[84] Similarly, 35 U.S.C. § 100 defines an "inventor" as an "individual," which has been interpreted to exclude AI, which was affirmed in *Thaler v. Hirshfeld* and *Thaler v. Vidal*.[85] However, the statute does not address AI-assisted inventions, leaving uncertainty about the degree of human contribution required for patent eligibility.

Ultimately, the conversation surrounding AI and intellectual property law is only beginning, but its resolution will have significant implications for the future of innovation. As AI technologies evolve, patent law will need to adapt to address questions of ownership, inventorship, and compensation for AI-driven inventions.[86] The *Thaler* case is just one step in

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[83] U.S. Copyright Office, *Copyright Registration Guidance: Works Containing Material Generated by Artificial Intelligence*, 88 Fed. Reg. 16190, 16192 (Mar. 16, 2023).
[84] *Id.*
[85] *Hirshfeld*, 558 F. Supp. 3d at 240.
[86] *Id*.

a broader conversation about the future of intellectual property in a world where AI is increasingly central to the creative process.

IV. The Impact of AI Beyond Intellectual Property Law

Beyond creative innovation, AI is seeping into everyday life, allowing individuals to complete more mundane tasks quickly; emails can now be written in a matter of seconds after prompting an LLM to do so. While this newfound efficacy can be appealing, it does not come without its faults. AI systems, on their own, cannot make decisions, so they rely heavily on "historical data that is used to train algorithms [which] can smuggle in bias[es]."[87]

These biases will affect not only how we feel, but also what opportunities are given to us. Companies are already using AI systems for employment, medical, and financial purposes.[88] One notable example involves Amazon's attempt to develop an AI system for hiring, using the resumes of past successful applicants, who were predominantly male.[89] Consequently, the AI dismissed or "downgraded resumes with the word women or that listed women's colleges," as these were underrepresented in

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[87] Colorado is First in Nation to Pass Legislation Tackling Threat of AI Bias in Pivotal Decision, CBS news (May 24, 2024), https://www.cbsnews.com/news/ai-colorado-law-algorithms-bias-antidiscrimination/.
[88] *Id.*
[89] *Id.*

the historical data.[90] This situation exemplifies what is called algorithmic bias, which occurs when "bias[es] [are] not present in the input data [but] added purely [to] the algorithm."[91] In Amazon's case, the AI system perpetuated gender-based biases that reflected historical patterns in the data. This poses a significant threat as companies increasingly rely on AI to screen applicants. Unlike human decision-makers, AI lacks nuance, potentially excluding equally qualified candidates simply because their profiles deviate from patterns in the training data, perpetuating systemic inequities and limiting opportunities for deserving individuals.[92] Given this threat, it is clear that we cannot genuinely say that we are in an era of innovation if AI is denying equal opportunities to all.

The ethical implications of AI extend beyond employment and permeate into other sectors like medicine and finance. In healthcare, there is a growing concern that it may do more harm than good—especially for marginalized communities. Inequitable treatment has been a long-standing issue for Black patients during pregnancy and postpartum care.[93] If an AI tool advises a doctor that a Black patient experiencing severe headaches

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[90] *Id.*

[91] Ninareh Mehrabi, et al., A Survey on Bias and Fairness in Machine Learning, 54 ACM COMPUT. SURV. 1, 1-35 (2021), https://doi.org/10.1145/3457607.

[92] Kate Crawford, ATLAS OF AI: POWER, POLITICS, AND THE PLANETARY COST OF ARTIFICIAL INTELLIGENCE 159 (Yale Univ. Press 2021).

[93] Khaira M. Bridges, *Race in the Machine: Racial Disparities in Health and Medical AI*, 110 VA. L. REV. 243, 289 (2024).

and blurry vision is not at risk of a serious condition like preeclampsia, then the doctor may dismiss this diagnosis despite clear warning signs.[94] Alternatively, the same system might recommend an unnecessary and invasive C-section for a healthy Black patient.[95] These scenarios highlight how AI, rather than erasing bias, can reinforce it.[96]

This happens because AI systems are only as good as the data they are trained on, and that data often reflects existing inequalities.[97] If historical medical practices have treated Black patients unfairly, then an AI system learning from that data is likely to replicate and even normalize those patterns. [98] What makes this even more dangerous is the perception that AI is inherently objective.[99] If an algorithm makes a biased decision, it is often viewed as infallible, as people tend to trust technology, shielding the discrimination behind a layer of supposed objective accuracy.[100]

The use of machine learning systems in financial sectors such as mortgage lending also presents the issue of racial inequalities. Consider the scenario where a rejected loan applicant files a racial discrimination

[94] *Id.*
[95] *Id.*
[96] *Id.*
[97] *Id.*
[98] *Id.*
[99] Khaira M. Bridges, *Race in the Machine: Racial Disparities in Health and Medical AI,* 110 VA. L. REV. 243, 289 (2024).
[100] *Id.*

lawsuit, but the bank argues that racial discrimination was not present or possible because the algorithm was designed to exclude race as a factor.[101] However, data shows a significant drop in loan approval ratings for Black applicants, even when race is excluded as a factor.[102] For example, in an experiment where equally matched applicants applied for loans, the Black applicants were rejected by the bank's algorithm at disproportionately high rates.[103] This scenario highlights how AI systems can still unintentionally perpetuate biases even when coded to be "neutral."[104] Therefore, transparency and oversight in decision-making processes driven by AI are especially important when the evaluations impact an individual's access to future housing or employment opportunities.[105] Safeguards could ensure that AI systems do not continue to reinforce existing inequalities and leave the affected without recourse.[106]

These scenarios demonstrate the urgent need for regulation to ensure that AI systems do not unfairly discriminate against individuals based on arbitrary or biased criteria. One promising step forward is the Colorado Anti-Discrimination in AI Law ("ADAI") Rulemaking. The ADAI

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[101] Bostrom & Yudkowsky, *supra* note 7.
[102] *Id.*
[103] *Id.*
[104] *Id.*
[105] *Id.*
[106] *Id.*

Rulemaking aims to prevent the use of AI in ways that discriminate against individuals based on protected characteristics such as race, gender, or socioeconomic status.[107] Additionally, the law requires that companies disclose when consumers are interacting with an AI system, including for hiring purposes.[108] Such laws are a critical part of broader regulatory frameworks that are necessary to ensure that innovation in AI does not come at the expense of fairness, accountability, and ethical integrity. Implementing this regulation, which holds companies accountable for the impact of their AI systems on marginalized communities, can help guide the responsible development and use of AI technologies.

Additionally, AI regulation must also address privacy concerns as these technologies increasingly collect and analyze personal data. Judicial precedent established in *Katz v. United States* (1967) helps further emphasize that the Fourth Amendment protects individuals' reasonable expectations of privacy, even in digital contexts.[109] However, emerging issues such as deepfake technologies call for additional governed protection regarding privacy with the advancement of AI technologies. Deepfakes are "fake videos [or pictures] that use [AI] to place one person's

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[107] Colorado Anti-Discrimination in AI Law (ADAI) Rulemaking, Colorado Attorney General's Office, (Jan. 23, 2025), https://coag.gov/ai/.
[108] *Id.*
[109] Katz v. United States, 389 U.S. 347, 360 (1967).

face … onto another person's body."[110] Unlike traditional "imaged-based (sexual) abuse," typically in the form of distributing private photos without consent (widely known as revenge porn), relying on having access to these intimate images, deepfakes circumvent this reliance, allowing predators to use perfectly ordinary photos and manipulate them to make pornographic content.[111] This capability eliminates the barriers previously associated with access to intimate material, creating new avenues for blackmail and harassment.

Deepfake pornography laws have been slow to pass at the state and federal levels. The California Civil Code § 1708.85 provides victims of non-consensual pornography, including deepfakes, a right to sue at the state level.[112] Federally, the Malicious Deepfake Prohibition Act of 2018 was introduced to criminalize the creation and distribution of deepfakes.[113] Recently, the DEFIANCE Act of 2024 was introduced to help victims of non-consensual deepfakes pursue civil remedies; however, there is still a need for comprehensive federal regulations.[114]

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[110] Chandell Gosse & Jacquelyn Burkell, Politics and Porn: How News Media Characterizes Problems Presented by Deepfakes, 37 COMMC'N & CRITICAL/CULTURAL STUD. 497, 497-511 (2020), https://doi.org/10.1080/15295036.2020.1832697.

[111] Id. at 498.

[112] Cal. Civ. Code § 1708.85 (West 2019).

[113] Malicious Deepfake Prohibition Act of 2018, S.3805, 115th Cong. (2018).

[114] Defiance Act of 2024, S. 3696, 118th Cong. § 3 (2024).

V. Conclusion

The evolution of AI presents an ongoing challenge for IP law, as it challenges the fundamental assumption that humans are the sole creators of intellectual property, testing whether our current frameworks can effectively govern the creative output of machines. Our intellectual property system, which emphasizes human creativity, is capable of regulating AI-generated content. However, as AI becomes increasingly integral to the creative process, it forces us to confront the shifting boundaries of creativity and innovation. Should IP law remain rooted in human ingenuity, potentially disregarding the transformative potential of AI-based innovation? Or can it adapt to recognize and reward the unique contributions of AI without undermining the essence of creativity itself? Paramount to this debate is whether AI is truly "creating" anything new or mimicking the expressions it learned from its training data. To prepare for a future where AI plays a central role in creativity, IP frameworks must anticipate where AI is going instead of reacting to these new changes.

Algorithmic bias in decision-making and deepfake pornography concerns also arise as AI becomes prevalent in everyday life. It is already prominent in banking, employment, and medicine, and without regulation, what is to stop AI from appearing in our education system or housing

applications? Additionally, exploiting and abusing individuals using non-consensual pornography has become easier with deepfake technologies, and while Colorado's ADAI law provides a basis for state-level regulation, federal legislation is still needed.

As AI-generated content becomes more prevalent, courts and policymakers are addressing its implications within existing intellectual property laws. Legal decisions have examined how authorship, ownership, and creative rights intersect with AI, sometimes reinforcing established principles and at other times questioning their applicability. The relationship between AI and intellectual property will remain an important area of discussion with the continued development in technology and the evolving legal interpretations that follow.