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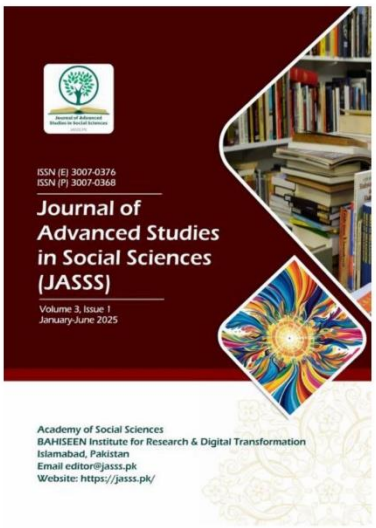

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Ethical and Legal Aspects of Generative AI and Copyright: The U.S. Example

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Abstract

Generative AI is transforming creative industries by merging advanced algorithms with human creativity. This paper examines the legal and ethical challenges of applying U.S. copyright law to AI-generated content. Using qualitative analysis of legal cases and a review of user-generated AI prompt data, we identify key issues regarding human authorship and fair use. This paper delves into the multifaceted ethical terrain of GAI, examining the perspectives of various stakeholders, including copyright holders, artists, and end users. It explores the ramifications of machine learning and training data on individual rights and innovation, striving to strike a balance that fosters progress while upholding artistic expression. In examining user-generated prompts submitted to the Midjourney platform, this study applied a qualitative coding framework to categorize prompts according to thematic elements, including artistic style, subject complexity, and apparent intent regarding originality. The coding scheme was developed inductively through an initial review of a representative sample of prompts and refined through iterative discussion among the authors. To enhance reliability, cross-validation was undertaken by independently coding a subset of prompts and reconciling discrepancies through consensus. This methodological approach seeks to provide insight into the emergent creative roles of AI users and their implications for copyright analysis. Nurturing open dialogue between proponents of change and preservation is crucial for addressing legal, ethical, and societal challenges, thereby harnessing the potential of generative artificial intelligence while safeguarding creators' rights and nurturing human creativity. Furthermore, this paper delves into the intersection of generative AI and copyright law, examining two fundamental questions: the copyrightability of generative AI-generated expression and the extent to which generative AI platforms and content may constitute copyright infringement or other violations. By exploring these questions, it contributes to the ongoing discourse surrounding the legal and ethical implications of this groundbreaking technology. Our findings indicate that current legal frameworks require clearer guidelines to balance innovation with the protection of creative rights.

Keywords: generative artificial intelligence (GAI), copyright law, fair use, copyright infringement, text-to-image AI, training data, legal challenges

INTRODUCTION

Generative artificial intelligence (AI) stands at the forefront of transformative technology and is poised to reshape industries, communities, and creative processes. This groundbreaking innovation prompts a critical inquiry into its alignment with copyright law, as the Copyright Office, Congress, and federal courts grapple with the complex challenges it presents. This study explores two pivotal questions emerging from this juncture: first, the conditions under which generative AI engenders copyrightable expression, and second, the extent to which its creation and utilization constitute copyright infringement or other violations (Hayes C. , 2023).

The evolution of the theoretical discourse on generative artificial intelligence (GAI) in practical applications underscores its profound impact. In recent years, individuals unversed in traditional artistic mediums have effortlessly generated intricate works, from Van Gogh-style portraits to vibrant scenes of anthropomorphic interactions, facilitated by simple text prompts and sophisticated AI models (Eichner, 2023). With this technological frontier, entities such as OpenAI, founded by Sam Altman and Elon Musk as a non-profit venture in 2015, have catalysed advancements. Notably, the emergence of Stability AI in 2020 further accelerated progress, particularly in text-to-image generation, culminating in the unveiling of ChatGPT, an advanced chatbot leveraging vast datasets for responsive interactions (Siddharth, 2022)

Integral to the functionality of AI systems such as ChatGPT is their reliance on extensive training sets, often incorporating contributions from countless individuals, some unwittingly, and encompassing copyrighted material (Lemley, 2021). One of the areas that artificial intelligence will affect is the regulations regarding intellectual property rights. Who should be the patent owner in the inventions made by artificially intelligent machines is a complex problem that needs to be solved. This problem brings with it the prediction that artificial intelligence will also affect the regulations regarding civil law, criminal law and liability law in time. In the study, first of all, what artificial intelligence is explained, then discussions about who will be the inventor in the event that artificial intelligence makes an invention are included. Finally, it is tried to touch on how regulations should be made in the field of patent law with a perspective that foresees the future. (Yüksel, 2018). This dynamic landscape raises profound legal and ethical concerns. Advocates assert the societal benefits of AI technologies and advocate for their fair use in training sets, while critics highlight potential infringements on creators' rights. Amidst these debates, this paper endeavors to dissect the multifaceted issues surrounding GAI, offering insights into its legal implications, ethical dilemmas, and policy imperatives. It advocates a nuanced approach that navigates the tension between fostering innovation and safeguarding individual rights, ultimately striving for optimal outcomes through informed dialogue and inclusive engagement.

1. EXPLORING THE FRONTIERS OF GENERATIVE AI

1.1. Generative Artificial Intelligence: Definition and Features

Generative artificial intelligence (AI) represents a transformative technological development that enables the production of content—whether text, image, audio, or video—that mirrors human creativity (govinfo.gov, 2023). Such technologies are increasingly utilized across professional and creative domains, including the drafting of legal briefs and the design of graphic materials (Mata v. Avianca, 2024). The underlying functionality of generative AI is grounded in advanced machine learning and deep learning processes, as demonstrated by platforms like Google's RankBrain (Google's RankBrain, n.d.). This study focuses on the legal and ethical implications arising from such technologies rather than the technical specificities of their architecture.

1.2. Large Language Models

Large Language Models (LLMs), exemplified by platforms such as ChatGPT, constitute a central application of generative AI, distinguished by their ability to produce human-like textual responses to prompts (Laya Neelakandan, 2024). These models employ advanced deep learning techniques to process and generate language with a degree of coherence that raises significant questions regarding authorship and originality under copyright law (Huzma Naveed, 2023). The present study concentrates on these legal dimensions rather than the technical intricacies of LLM architecture.

1.3. Latent Diffusion Models

Latent diffusion models, including technologies such as DALL•E and Midjourney, enable the generation of highly detailed images from textual prompts, expanding the creative possibilities of generative AI (Nicholas Carlini, 2023). These models employ advanced neural networks and denoising processes to produce outputs that challenge traditional notions of authorship and originality within copyright law (Andrew, 2023). This paper focuses on the legal ramifications of such technologies, rather than the technical specifics of their operational processes.

2. COPYRIGHT PROTECTION FOR AI-GENERATED WORKS: LEGAL IMPLICATIONS AND THRESHOLDS

2.1. Defining Copyright Eligibility for AI-Generated Works

The surge in generative AI technologies has prompted a thorough examination of the applicability of U.S. copyright law to AI-generated creations. Current legal interpretations highlight the necessity of discernible "human input" to attribute authorship to AI-generated works under U.S. copyright protection (v.Perlmutter, 2024). The prevailing consensus leans towards the requirement that an AI user's involvement must meet the standards of an "author" of the generated work to warrant copyright protection. This perspective underscores the significance of human authorship in the copyright framework, as mandated by the U.S. Copyright Office's Human Authorship Requirement.

2.2. The Human Authorship Requirement

Neither the Copyright Clause of the U.S. Constitution (which refers to "authors" but does not define them) nor the Copyright Act expressly state that an author must be human (v. Maaherra, 1997). The Human Authorship Requirement is a construct shaped by case law,

Office guidance, and Office registration decisions (subject matter of copyright.). This requirement was initially articulated by the Office in its 1973 Compendium of U.S. Copyright Office Practices, stipulating that the Office would not register material not originating from a human agent (U.S. Copyright Office , 2021). Later versions of the Compendium further elucidate this requirement, posing a critical query regarding the copyrightability of computer-generated work: Whether the work primarily reflects human authorship, with the computer or other device merely serving as an auxiliary instrument, or whether the traditional elements of authorship in the work were conceived and executed by a machine (Id. at § 306) .

Support for the Human Authorship Requirement finds its roots in key legal precedents, such as the U.S. Supreme Court's decisions in the Trade-Mark Cases and Burrow-Giles Lithographic Co. v. Sarony. These cases suggest that copyright law protects intellectual creations founded in the creative powers of the mind, thereby implying a human-centric perspective on authorship (Arthur R. Miller, 1993). However, the precise interpretation of these early legal decisions remains contentious, with scholars debating whether the Constitution mandates human authorship (Thaler v. Perlmutter, 2023). Despite this debate, subsequent cases directly addressing the human authorship requirement remain sparse, largely because courts typically view machines involved in artistic creation as tools assisting human creators (Review, 1995).

On March 16, 2023, the Office issued guidance titled "Copyright Registration Guidance: Works Containing Material Generated by Artificial Intelligence," drawing parallels with Ninth Circuit cases involving works allegedly authored by spiritual beings and animals to underscore the necessity of human authorship (88 Federal Register 16190, n.d.). For instance, in Urantia Found. v. Maaherra, a district court ruled that a religious work purportedly authored by divine beings met the minimal creativity threshold but was not eligible for copyright as it lacked human creativity (law.justia.com, 2023).

2.3. Computer-Generated Works Lawsuits in the US

In many cases, the U.S. Copyright Office has granted registrations for computer-generated works, which presents a challenge for human authorship. Notably, in November 1984, the Office issued a copyright registration for a computer-generated book titled "The Policeman's Beard is Half Constructed," encompassing "computer prose and poetry / by Racter" (Denicola, the University of Nebraska College of Law,, 2016). Racter, a contraction of "Raconteur," was a text generation system developed by William Chamberlain and Thomas Etter using INRAC, a programming language they created, running on a Z80 micro with 64 K of RAM (Robert Denicola, TX0001454063, 2016). The prose produced by Racter in "The Policeman's Beard" has been characterized as disjointed yet contains a semblance of narrative coherence through repeated phrases and names (Robert Denicola, University of Nebraska College of Law Record No. TX0001454063, 2016). Descriptions of Racter's work emphasize its unique blend of linguistic intuition and randomness, constrained by the rules of English grammar and a lexicon of 2,400 words (Henrickson, 2021).

In June 1993, the Office registered another computer-generated work titled 'Just This Once' (Denicola, Record No. TX0003633395, 2016). This work was the result of Scott French identifying idiosyncrasies in the writing style of bestselling author Jacqueline Susann, codifying them into rules, and incorporating them into a computer program to generate text (Robert C. Denicola, 2016). French described the creation process as a

collaboration between himself and the computer, with each contributing approximately half of the prose (Robert C. Denicola, 2016).

These instances challenge the conventional understanding of human authorship and highlight the evolving landscape of copyright law, particularly concerning the use of computational techniques in creative endeavors.

2.4. Zarya of the Dawn

On February 21, 2023, the U.S. Copyright Office invalidated a copyright registration granted to artist Kristina Kashtanova for her comic book, Zarya of the Dawn, upon discovering evidence on social media confirming that the images in the comic were generated using the Midjourney generative AI platform (U.S. Copyright Office C. O., 2024).

The Office conducted a nuanced assessment of the copyright of the various components of the work. It was determined that the text, entirely authored by Kashtanova, as well as her selection and arrangement of images and text, were eligible for copyright protection. However, it revoked the copyright registration for the midjourney-generated images and issued a revised registration covering only the human-authored aspects of the work.

The decision rested on the Office's reasoning that Midjourney generates images in an "unpredictable way," precluding Kashtanova from actively forming the images herself (Burrow-Giles Lithographic Co. v. Sarony Burrows, 1884). Unlike conventional artistic tools, such as cameras, where artists have significant control over the final image, Midjourney's unpredictability undermines the authorial agency typically associated with copyrightable works. The Office also dismissed Kashtanova's argument regarding the use of "creative, human-authored prompts," noting that Midjourney's prompts merely function as "suggestions" rather than explicit instructions (U.S. Copyright Office U. C., 2023).

While maintaining the stance that non-human-authored works are ineligible for copyright protection, the office acknowledged the possibility of AI platforms operating differently from Midjourney and left room for further exploration of generative AI authorship.

2.5. Thaler v. Perlmutter

On August 18, 2023, the U.S. District Court for the District of Columbia issued a significant decision regarding the copyrightability of AI-generated works, particularly in relation to human authorship requirements (Thaler v. Perlmutter, 2023).

The case involved Dr. Stephen Thaler's attempt to register a work titled A Recent Entrance to Paradise, which was generated by his Creativity Machine, an artificial neural network capable of creating two-dimensional artwork. Thaler, listing himself as the claimant and the Creativity Machine as the author, applied for registration to the U.S. Copyright Office, which was denied due to the Human Authorship Requirement (Copyright Review Board, 2022)

In his appeal, Thaler challenged the constitutional and statutory basis of the Human Authorship Requirement, arguing that the work-made-for-hire doctrine implied non-human authorship validity under U.S. copyright law (Thaler v. Perlmutter, 2023). However, the Court upheld the Office's decision, asserting that human authorship is a fundamental aspect of copyright law, as specified by the text of the Copyright Act (Thaler v.Perlmutter, 2023)

The Court dismissed Thaler's arguments related to the work-made-for-hire doctrine, emphasizing that the absence of human involvement made nothing eligible for copyright registration. It further noted that Thaler's attempts to imply human involvement lacked substantiation in the administrative record (Perlmutter, 2023).

While acknowledging the evolving landscape of copyright law in the age of AI, the Court's ruling highlighted the need for clarity on various aspects, such as the extent of human input required for AI-generated works to qualify for copyright protection, the assessment of originality in AI-generated works trained on extensive datasets, and the optimization of copyright law to encourage creative AI use.

2.6. Can AI-Generated Works Ever Constitute "Human Authorship"?

The U.S. Copyright Office's stance that human authorship is a prerequisite for copyright protection aligns with the notion that generative AI lacks the capability for "original intellectual conception" (Matthew, 2023). This perspective is grounded in the understanding that AI, as it currently stands, does not engage in the creative process as a human would, thus not qualifying as an "author" in the traditional sense.

However, this raises critical questions about the nature of creativity and control in the context of AI. The unpredictability inherent in the artistic process, a hallmark of human creativity, is not typically demanded of AI-generated works. Yet, this unpredictability is what often leads to the creation of art that lies at the core of copyright protection. If such unpredictability were to be strictly enforced, it could potentially stifle the very essence of artistic innovation (Copyright Office, 2024).

The evolution of case law over the past century, particularly since the Burrow-Giles decision, has established that photographs, regardless of their simplicity or the unpredictability involved in capturing them, are protected by copyright because they bear the personal influence of the photographer (Reportlinker, 2024). This principle has not been uniformly applied to AI, where users must demonstrate substantial control over the AI to be considered the "master mind" behind the generated work (Copyright Office, 2024).

In the realm of audiovisual works, a director's authorship is recognized even though they may not have direct control over every aspect of the performance. The directorial process is iterative, involving numerous takes and edits to achieve the final vision, much like how a generative AI user might generate multiple images before selecting the desired one (Ryan R. Williams, 2019). This iterative process is analogous to the way directors work with actors, suggesting that the level of predictability required for authorship should be reconsidered (Ryan R. Williams, 2019).

The Copyright Office has acknowledged the potential for AI-generated works to be copyrighted if the AI operates differently than existing models like Midjourney. This suggests that platforms designed to strengthen the link between user input and creative output, making prompts more directive, could meet the criteria for copyright protection (U.S. Copyright Office, 2023). Adobe Firefly, for instance, is marketed as providing users with creative control akin to a manual camera, indicating a shift towards more user-directed AI platforms (Ashley Still, 2023).

Finally, the approach to computer-generated works in other jurisdictions, such as the U.K., where the person undertaking the necessary arrangements for the creation of the work is considered the author, poses the question of whether the U.S. should consider similar provisions, especially in light of the advancements in generative AI (Copyright (UK), 1988).

It remains to be seen how legislative bodies will respond to the challenges and opportunities presented by AI in the creative domain.

3. COPYRIGHT LIABILITY ARISING FROM GENERATIVE AI MODELS

Generative AI platforms are under increasing scrutiny due to potential copyright infringement issues arising from their use of copyrighted material within their training datasets. Presently, there have been nine copyright infringement lawsuits filed within the U.S. against generative AI platform companies (Samuel V.Eichner, AIPLA Annual Meeting 2023, 2023).

Moreover, the evolution of generative AI technology may give rise to additional infringement claims, particularly against corporate users of generative AI. The viability of these claims depends on establishing the elements of infringement and the effectiveness of defences like fair use (Feist Publications, 1991).

3.1. Copyright Claims Against Generative AI Platforms

To establish copyright infringement, a plaintiff must demonstrate ownership and copying of protectable expression (Feist Publications, 1991). Lawsuits against generative AI platform companies have primarily focused on two theories: infringing outputs and infringing training sets.

3.1.1. Plaintiffs Alleging Violation of Printouts

The challenge is to prove that generative AI outputs are substantially like protected works. It remains unclear whether generative AI outputs meet this legal standard. Allegations vary, with some claiming outputs are not closely matched to specific content in training data (Satava v.Lowry, 2003), while others argue they produce highly similar or derivative works (Andersen v.Stability, 2023).These allegations implicate exclusive rights under the Copyright Act, though the extent of infringement remains to be determined (v. Stability AI, 2023). Ultimately, infringement may depend on the specific generative AI model, user prompts, presence of infringement prevention measures, and the depth of the training dataset.

3.1.2. Alleged Violation of Training Sets

Questions are being raised about whether generative AI models are being trained to violate copyright law. The lawsuits have raised concerns about the content used to train foundational models (17 U.S.C. section 106 n.42, 2002). Some plaintiffs allege infringement occurred during model training based on platform outputs or information published by model developers (17 U.S.C. section 106 n.47, 2002). However, the extent to which copyrighted content is copied during training is unclear. While generative AI models typically don't copy data literally, the training process may involve creating interim copies, potentially leading to infringement liability (Matthew Sag, 2023). Liability questions also extend to downstream platforms that use technology developed by others. Plaintiffs argue that secondary platforms using allegedly infringing products may be liable for infringement (Samuel V.Eichner, 2023).

3.1.3 DMCA Violation Claims Against Generative AI Platforms

Several copyright infringement cases against generative AI platforms also involve alleged violations of the Digital Millennium Copyright Act (DMCA). Section 1202(a) of Title 17 prohibits knowingly providing false copyright management information (CMI) or distributing/importing false CMI with the intent to induce, enable, facilitate, or conceal infringement. Section 1202(b) prohibits various actions if undertaken knowingly or with reasonable grounds to know they will induce, enable, facilitate, or conceal copyright infringement.

The majority of DMCA violations in these cases seem to fall under Section 1202(b) (Mango v. BuzzFeed, 2020). For example, Getty Images has accused Stability AI of removing the "gettyimages" watermark from images used to train its model (00135-GBW, 2023) Similarly, plaintiffs in the Tremblay case against OpenAI allege intentional removal of CMI from the plaintiffs' works because the training process does not preserve any CMI. Plaintiffs also allege that OpenAI created derivative works by incorporating plaintiffs' works into a training dataset and distributing these works without their CMI (03223-AMO, 2023).

A major hurdle to these CMI claims will be the "double-scienter" requirement, particularly concerning downstream defendants who did not directly train a foundational model but utilized the technology to offer independent services (03223-AMO, 2023). It may be difficult to show that these defendants knew CMI was removed from works they never directly

incorporated into a training dataset. Plaintiffs may argue that defendants had generalized knowledge of infringement based on a generative AI training process allegedly designed not to preserve CMI, which presents unclear chances of success.

Additionally, it is unclear whether generative AI defendants have "reasonable grounds to know" that the removal, alteration, distribution, or importation of CMI "will induce, enable, facilitate, or conceal an infringement," especially if infringement occurs during the assembly and preprocessing of the training corpus (Sag Testimony at 4, 2023). Defendants may argue convincingly that they lacked reasonable grounds to know about CMI violations given the novelty and legal uncertainty surrounding generative AI technology.

3.2. Defenses Against Copyright Claims Against Generative AI Platforms

3.2.1. Fair Use

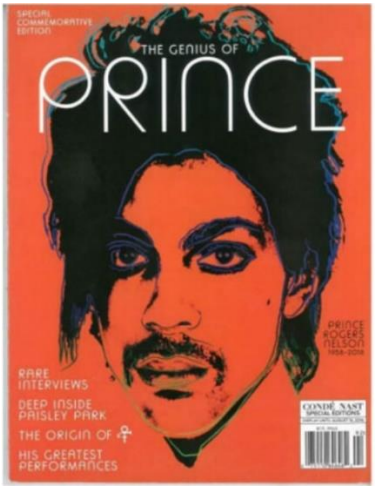
Although the generative AI litigations referenced above are still in their early stages, defendants in those cases are likely to raise fair use defenses to infringement claims premised on outputs and training datasets. Courts considering a fair use defense to copyright infringement will look to the four statutory fair use factors:

I. The purpose and character of the use, including whether such use is of a commercial nature or is for nonprofit educational purposes,
II. The nature of the copyrighted work,
III. The amount and substantiality of the portion used in relation to the copyrighted work as a whole,
IV. The effect of the use upon the potential market for or value of the copyrighted work (17 U.S.C. Section 107, 2023).

Fair use defenses to infringement claims premised on generative AI training datasets will likely depend on how courts view the purpose and character of training set uses, as well as their effect on the plaintiff's reasonable licensing market for training datasets (Inc. v. HathiTrust, 2014). As for the first-factor analysis, the purpose and character of the use, analogies might be drawn to the Second Circuit's Authors Guild decisions. In Authors Guild, Inc. v. HathiTrust, the Second Circuit held that copying printed library books to create a searchable digital research repository was "quintessentially" transformative. Again, in Authors Guild, Inc. v. Google Inc., the Second Circuit held that the copying involved in the Google Books project was fair use due to its "highly transformative purpose" of building a digital search tool that achieved something the underlying works could not, and thus did not compete with those underlying works. Generative AI platforms may also have a "highly transformative purpose" because they take traditional content and repurpose it to develop a creative tool that serves a fundamentally different purpose from the works that were copied to create it. One might argue that this purpose is at least as "transformative" as other "highly creative and innovative" uses that courts have protected with the fair use doctrine. Analogies to other cases can be drawn as well. For example, some have drawn analogies to reverse engineering cases, arguing that generative AI training is fair use because it is a non-expressive use akin to reverse engineering.

Regardless of which first-factor arguments are made in support of fair use, courts will need to consider the Supreme Court's decision in Warhol v. Goldsmith. In Warhol, the Court analyzed the first fair use factor by focusing on the Andy Warhol Foundation's licensing of

'Orange Prince'—not on the transformative value of 'Orange Prince' itself—and concluded that because that kind of licensed use (featuring a celebrity portrait in a magazine) was very similar to plaintiff's use, the first factor favored plaintiff.



Thus, a court considering a fair use defense to generative AI training infringement might focus less on the transformativeness of the generative AI model itself, and more on the precise use of the work in relation to the generative AI model. For example, a temporary or ephemeral use of a copyrighted work for training a generative AI model that never generates the original seems more likely to be favored in a first factor analysis than a permanent use in generative AI "database" in which users can invoke and incorporate the asserted work into derivative works that serve the same purpose as the original.

This begs the question of whether the first fair use factor favors a generative AI training use that itself may be fundamentally different from the purpose and character of the original work, but which gives rise to a host of downstream uses that serve a similar or identical purpose as the original and may even be commercial substitutions for the original work. Courts are likely to analyze this under the fourth fair use factor, i.e., by considering the relevance and plausibility of a licensing market for generative AI training dataset uses (Authors Guild v. Google, 2015). In fact, some plaintiffs have anticipated this argument, alleging that the infringement has impacted their licensing market for generative AI training sets (Inc. v. Stability AI, 2023). While it remains to be seen whether plaintiffs will be able to prove that a genuine dataset licensing market exists, that may be unnecessary; past courts have found that "likely to be developed" licensing markets have sufficed to shift the fourth fair use factor in a defendant's favor (v. Texaco Inc., 1994). If so, courts may consider whether the allegedly impacted licensing market is speculative or realistic for the specific parties and works before the court. Fair use may also be an applicable defense to infringement claims premised on generative AI outputs, assuming plaintiffs can establish substantial similarity. In these cases, the strength of the fair use defense will likely depend on the nature of the challenged use. At one extreme, an impressive output may emerge that is substantially like the original.

3.2.2. Other Defenses

While fair use gets most of the "attention" when it comes to possible infringement defenses, other defenses may apply. De minimis non curat lex ("the law does not concern

itself with trifles") "insulates from liability those who cause insignificant violations of the right of others" (Ringgold v. Black Entm't Television, 1997).

While the typical example of de minimis use tends to be small and/or fleeting uses of copyrighted material in the background of an image or scene, the copying (if any) involved in the creation and/or use of generative AI training datasets may be de minimis to the extent that copies are not stored but are merely transitory "cache" copies for generative AI models to "learn" from. De minimis defenses may also be raised on the basis that no single copyrighted work will have a significant impact on the training of a generative AI model that uses billions of texts, images, or other content to train, especially if the training dataset also includes licensed and/or public domain works.

The Section 512 "Safe Harbor" of the Digital Millennium Copyright Act may also come into play as users begin to incorporate copyrighted works in generative AI model prompts, e.g., by uploading an image to guide the model toward a desired result. Depending on the technology behind the generative AI model and whether the model stores user inputs to further train the model, content uploads as prompts may indeed be "stored at the direction of a user" and contain infringement of which the generative AI platform service provider is unaware (17 U.S.C. Section512(c), 2010). While some platforms are only just beginning to offer functionality that allows users to upload content to guide generative AI models toward a specific result, this defense may become increasingly relevant as that functionality becomes more prevalent.

4. COPYRIGHT CLAIMS AGAINST GENERATIVE AI USERS

It is not yet clear whether and how users of a generative AI system can be held liable for the infringing use of a generative AI model trained on unlicensed copyrighted datasets. Copyright infringement is a strict liability tort; users may not be aware that the training sets were unlicensed or that the creation and use of generative AI platforms were infringing, but they may still be liable, albeit with potentially diminished damages for innocent or unintentional infringement (17 U.S.C. Section504, 2010). There is also the question of whether generative AI platforms can be held secondarily liable under vicarious, contributory, or inducement infringement theories.

5. GENERATING NEW QUESTIONS

There are many more questions to consider, and as generative AI technologies continue to evolve and be adopted over time, more questions will continue to arise. It remains to be seen how copyright law will evolve on the judicial and legislative fronts to address these challenges. (Hayes C. , 2023)

6. ANALYSIS OF THE THEORETICAL FOUNDATIONS OF INTELLECTUAL PROPERTY RIGHTS AND FAIR USE RIGHTS

6.1. Philosophical Reasons

Intellectual property (IP) law is founded on philosophical principles that intersect with notions of property rights, creativity, and societal progress. Lockean labor theory, traditionally applied to tangible property, finds renewed relevance in justifying ownership of intellectual creations. This theory posits that individuals invest labor and creativity into unowned ideas, thereby enhancing their value and forming the basis for ownership (17 U.S.C. Section102, 2020). Similarly, Hegel's personality justification underscores the

intimate link between creativity and individual identity, strengthening creators' claims to their intellectual outputs (17 U.S.C. Section102(b), 2020).

The legal framework in the United States adopts a utilitarian approach to intellectual property, as reflected in the Constitution (U.S. Const. Art. I, Chapter 1, cl. 8.). This approach aims to promote scientific and artistic progress by granting authors and inventors exclusive rights for limited periods. By balancing these exclusive rights with the eventual integration of new creations into the cultural commons, the system seeks to foster innovation while enriching society and culture.

6.2. Requirements for copyright protection

Copyright protection hinges on two key factors: originality and fixation. While the criteria for originality and fixation have evolved over time, courts acknowledge a broad spectrum of creative works, ranging from intricate literary compositions to hastily sketched drawings (17 U.S.C. Section102(b), 2020). It's worth noting that registration with the Copyright Office is essential to pursue legal action for infringement (17 U.S.C. Section106, 2020).

Controversies surrounding the requirement of human authorship have emerged in recent cases, such as Naruto v. Slater (NARUTO v.Slater, 2018). In this case, the dispute over the authorship of a photograph taken by a monkey challenged conventional notions of human authorship and copyright eligibility. Ultimately, the Ninth Circuit ruled against the monkey's claim to copyright, illustrating the evolving landscape of copyright law in the digital age (NARUTO v.Slater, 2018).

6.3. Fair Use

Fair use doctrine serves as a critical safeguard for creativity and expression, permitting the limited use of copyrighted material without authorization (17 U.S.C. Section107, 2020). Rooted in federal copyright law, fair use balances the rights of copyright holders with the public interest in innovation and free speech. The four statutory factors outlined in Section 107 of the Copyright Act guide courts in determining fair use (17 U.S.C. Section107, 2020). Transformative use, which alters the original work with new expression or meaning, often plays a pivotal role in fair use analysis (Campbell v. Acuff-Rose Music, 1994).

Landmark cases like Campbell v. Acuff-Rose Music have significantly influenced fair use jurisprudence, emphasizing the transformative nature of new creations (Campbell v. Acuff-Rose Music, 1994). In this case, the Supreme Court held that commercial parody could qualify as fair use, highlighting the importance of considering the purpose and character of the use in fair use analysis (Campbell v. Acuff-Rose Music, 1994).

The fair use doctrine continues to evolve, as evidenced by recent cases like Andy Warhol Foundation for the Visual Arts, Inc. v. Goldsmith, which further refine the boundaries of fair use (Ronald Mann, 2023). In this case, the Supreme Court determined that the fair use defense did not apply to Warhol's use of a copyrighted photograph, underscoring the significance of considering the purpose and manner of the secondary use (Ronald Mann, 2023).

7. CURRENT CASES AND RECOMMENDATIONS

The intersection of copyright law and generative artificial intelligence (GAI) has prompted a significant body of legal disputes and policy discourse. Judicial bodies and legislators increasingly confront the complexities of applying existing intellectual property frameworks to machine-generated content (Carol Mullins Hayes, 2023). This section examines prominent ongoing cases and considers recommendations emerging from legal scholarship and practice. Collectively, these developments underscore the urgent need for statutory clarity and judicial doctrines that address the evolving role of human authorship in the age of generative AI.

7.1. Current Cases on Generative AI

The rapid expansion of generative artificial intelligence (GAI) technologies has prompted high-profile legal disputes that highlight the complex relationship between intellectual property law and AI-generated content. Among these, Andersen v. Stability AI and Getty Images v. Stability AI exemplify the tensions surrounding the use of copyrighted materials in AI training datasets (Andersen et al. v. Stability AI Ltd. et al., 2023; Ashley Belanger, 2023). These disputes form part of a broader landscape of litigation involving generative AI, as reflected in tracking resources such as the Master List of Lawsuits v. AI (2024).

In Andersen v. Stability AI, the plaintiffs allege that Stability AI incorporated copyrighted images without authorization in training its models, thereby infringing upon their rights and undermining the value of their creative works. The case centers on whether the inclusion of copyrighted images in training data constitutes fair use or infringement, and whether AI developers bear liability for the outputs generated by these models. Figure 1 presents a sample output cited in the Andersen complaint, illustrating how the AI-generated image allegedly mirrors protected artistic elements (Andersen et al. v. Stability AI Ltd. et al., 2023). This visual evidence is central to the plaintiffs' claim that the AI system reproduced substantial portions of copyrighted material.

Similarly, Getty Images v. Stability AI involves allegations that Stability AI used Getty's copyrighted photographs in its training corpus without obtaining licenses. The lawsuit challenges the boundaries of copyright protection as applied to AI-generated outputs, raising fundamental questions about derivative works, authorship, and the obligations of AI developers regarding training data (Ashley Belanger, 2023). The case highlights the need for judicial clarification on whether traditional copyright frameworks are sufficient to address the complexities introduced by generative AI systems.

Collectively, these disputes underscore the urgency of legal and policy responses that balance the promotion of innovation with the protection of creative rights. They illustrate the critical role of courts in shaping the evolving intersection of generative AI and intellectual property law.

7.2 Fair Use of Education Data: An Assessment

At the crux of the GAI-copyright nexus lies the contentious debate surrounding the fair use status of training data under existing copyright frameworks. Noteworthy scholarship by Lemley and Casey delves into the transformative potential of incorporating copyrighted works into GAI training sets, presenting nuanced arguments in favor of expanding fair use doctrines to accommodate technological progress (Mark A. Lemley & Bryan Casey, 2020). However, dissenting viewpoints challenge the sufficiency of fair use defenses in the GAI context, citing apprehensions regarding the commercial exploitation of unlicensed copyrighted material. This dialectical discourse underscores the imperative of devising legal frameworks that strike a delicate balance between fostering innovation and safeguarding intellectual property rights. Lemley's advocacy for considering the impracticability of licensing training sets resonates in ongoing discussions concerning the feasibility of licensing arrangements within the GAI landscape (Mark A. Lemley & Bryan Casey, 2020). These issues are reflected in ongoing cases, such as Andersen v. Stability AI and Getty Images v. Stability AI, where courts must consider how training data practices intersect with fair use defenses and copyright obligations.

7.3. Recommendations

Navigating the intricate legal terrain of GAI necessitates innovative licensing models that harmonize technological advancement with ethical and legal imperatives. Proposals for compulsory licensing mechanisms, akin to those governing standard essential patents (SEPs), offer a promising avenue for incentivizing collaboration while mitigating the risk of copyright holdup (Mark A. Lemley, 2007).

Policymakers can draw on patent law and technology standards to develop a harmonized legal framework that fosters innovation, protects intellectual property, and supports ethical AI development (Jay P. Kesan & Carol M. Hayes, 2014).

As cases develop and scientific discourse deepens, stakeholders must remain vigilant in navigating the complex interplay between GAI and copyright law. Through interdisciplinary collaboration and rigorous science, society can harness the transformative potential of GAI while preserving the principles of intellectual property protection and ethical innovation (Hayes C. M., 2023). These recommendations are informed by the complexities highlighted in key disputes, including Andersen v. Stability AI and Getty Images v. Stability AI, which illustrate the difficulties of applying traditional copyright doctrines to generative AI systems.

8. A QUALITATIVE REVIEW OF GAI TIPS FOR COPYRIGHT COMPLIANCE

Effective use of GAI is a talent that can be honed. Recent research from a team at Google has explored the skill involved in the creation of GAI prompts (Chang, 2023). The previous section dissects the conflicts between copyright law and the use of GAI. Carol Mullins Hayes, in her paper, evaluates the degree to which GAI output should itself be copyrightable (Hayes C. M., 2023). Naruto v. Slater stands for the proposition that copyright does not vest in a non-human author, but what about the prompts?

With the status of copyrightability in the output unsure, this study aims to explore an alternative justification for intellectual property rights relating to works generated with the assistance of AI. Specifically, under the law, whether a work is considered copyrightable depends on the work being "fixed" and possessing "originality." The research question being explored here is whether text prompts submitted to the Midjourney bot through a Discord server possess enough originality for the prompts themselves to be eligible for copyright protection.

To address this question, the study applied a coding framework that categorized prompts according to artistic style, subject complexity, and intent regarding originality. Reliability was enhanced through independent coding of data subsets and reconciliation of results through consensus. Building on this, Hayes explored the process surrounding prompts for GAI, noting that several websites list parameters and styles recognized by the Midjourney Bot.

To begin answering this question, Hayes explored the process surrounding prompts for GAI. There are several websites listing parameters and styles recognized by the Midjourney Bot. The official Midjourney website, for example, includes such information in its documentation. The following table includes examples of available parameters (Midjourney Parameter List, 2023).

Parameters	Command	Description
Aspect ratio	--ar	Change aspect ratio of generated image. Default, 1:1
Chaos	--chaos <number 0-100>	Higher values produce more unusual generations. Default is 0.
No	--no	Negative prompting. Shorthand for ::-0.5 (see Weight)
Quality	--q <.25, .5, 1, or 2)	Quality of rendering. Default is 1.
Stylize	--s <0 to 1000>	Low numbers are more accurate to the prompt. Default is 100.
Tile	--tile	Generate images with repeating patterns
Version	--v <1,2,3,4,5>	Which version of Midjourney algorithm is used. Default is the most recently released.
Weight	::	Emphasizing certain parts of the prompt. Default is 1. Example: wood::4 house::1

Table 1 Sample Midjourney prompt parameters (Carol Mullins Hayes, Generative Artificial Intelligence and Copyright: Both Sides of the Black Box, Univ. ofWash. -The Info. Sch., 2023).

There are also sources that provide examples of output for different phrasings of style prompts and references, such as arranging output in the style of an expressionist painting (Willwulfken, 2023) (Henrique Centiero, 2023). Prompt writers often specify some level of realism (e.g., cartoon, realistic, photorealistic, hyper-realistic), though it is unclear the degree to which the Midjourney bot distinguishes between variations of the character string "realist." Sometimes, a prompt writer who wants output to be photorealistic will specify the type of film, shutter speed, and focal length. Prompts also might include information like the direction of lighting or what type of lens the image is being viewed through (e.g., wide-angle). In addition to generating images using unique prompts, users can also specify a previously generated image and request variations of that image or scale up the quality. The complicated elements that can be combined in text form to have better control over the bot's output provide strong support for the idea of the prompts themselves being considered creative works. The focus of this portion of the paper is on providing further evaluation of the prompts based on their merits.

The long-term goal of this study is to provide an evaluative framework for the originality of user-generated prompts for AI-facilitated artwork. In the United States, officials with the Copyright Office have already revoked copyright registrations for works that they later learned were produced with the use of GAI models (Blake Brittain, 2023). Kris Kashtanova, the author of a graphic novel called Zarya of the Dawn, learned in February that the Copyright Office had canceled the copyright for the illustrations created using Midjourney because they were not the product of human authorship.

This research asks whether this is the proper outcome. If, in fact, GAI prompts are original in the eyes of copyright law, then there is a straight line between the artwork generated using these prompts and the users who crafted the prompts. It is quite reasonable that the output of a GAI model could be characterized as a derivative work based on the independently copyrightable prompt that was arranged and written by the user (Daniel J. Gervais, 2022). Of course, as the above analysis makes plain, this will be subject to a counterbalancing against the rights of creators whose works are included in training sets. Ultimately, an entirely new legal approach may be needed to adequately address the concerns of existing copyright owners and the value added by GAI users.

8.1. Research Methods

Currently, the primary method for users to input text prompts into Midjourney is through a dedicated Discord server. Hayes has been a Discord user for the last few years and joined the Midjourney server about six months ago by clicking a link on the service's public website. As a user of both Discord and the Midjourney server, Hayes is familiar with the dynamics of these environments and is well prepared to approach this topic respectfully.

To collect data, Hayes downloaded a free extension for Google Chrome called Discordmate. This extension enables users to export chat logs from a specific Discord channel accessed through the browser. The exported files can be in HTML or CSV format. Unfortunately, the extension is currently limited to exporting the most recent 1000 messages from a chat log within a specified time frame, and a single Midjourney chat log may record over 5000 entries every day (Carol Mullins Hayes, Generative Artificial Intelligence and Copyright: Both Sides of the Black Box, Univ. ofWash. -The Info. Sch., 2023).

Because LLMs improve over time and learn from earlier prompts, Hayes selected a week in April (4/9/23-4/15/23) to collect chat logs. Midjourney has been in use since early 2022, so the model has had over a year to improve. During that time, Midjourney has been updated in the form of different version releases.

Hayes collected the logs one day at a time, starting at midnight in Pacific Standard Time. The collection ranged from 12:00 am on Sunday to 11:59 pm on Saturday. Because of the limitations of the technology available, only the last 1000 posts from each day were gathered. Starting time of collection thus varied, but the end time for collection on each day was 11:59:59 pm. Hayes recorded the total number of posts identified for each day, though only 1000 per day were able to be included in the exported CSV file. The choice of week was not influenced by availability or convenience. Version 5 of Midjourney was released on March 15, 2023, and a week in April was randomly selected to gather a sample that primarily used that version of Midjourney. In comparison, Version 4 was released on November 5, 2022, and Version 5.1 was released on May 3, 2023. Hayes' prediction was accurate, as Version 6 of Midjourney was indeed released on December 21, 2023.

8.2. Data Organization

There were 7000 records extracted using the process outlined above (Carol Mullins Hayes, Generative Artificial Intelligence and Copyright: Both Sides of the Black Box, Univ. ofWash. -The Info. Sch., 2023). As noted, this sample does not represent every single record from that week, but rather the last 1000 records from each day. The original data collection findings are summarized in the following table. As shown below, there were over 30,000 records generated in that channel during the selected week, though only 7000 could be exported using the chosen method. The records include a timestamp for each entry, and as noted above, the starting time of collection each day varied significantly.

Date	Total Found	Channel	Day
4/9/2023	5290	#newbies-181	Sunday
4/10/2023	4937	#newbies-181	Monday
4/11/2023	4427	#newbies-181	Tuesday
4/12/2023	4622	#newbies-181	Wednesday
4/13/2023	4504	#newbies-181	Thursday
4/14/2023	3432	#newbies-181	Friday
4/15/2023	2825	#newbies-181	Saturday

Table 2 Raw values of the records counted from midnight to midnight each day (Carol Mullins Hayes, Generative Artificial Intelligence and Copyright: Both Sides of the Black Box, Univ. ofWash. -The Info. Sch., 2023).

8.3. Results from Full Sample

In the sample, a single prompt could be as short as three characters or as long as 221 characters. The average length of a prompt was 42 characters, and the median length was 42 characters as well. This means that most prompts submitted were between 39 and 45 characters long. There was a total of 3079 prompts that were analyzed (Carol Mullins Hayes, Generative Artificial Intelligence and Copyright: Both Sides of the Black Box, Univ. ofWash. -The Info. Sch., 2023).

8.4. Observations from Coding

Initial coding identified patterns in prompt submissions, with many users submitting multiple prompts. A significant proportion of prompts focused on depicting persons, with various subcategories identified within this theme. Other frequent subjects included animals, landscapes, and abstract concepts (Carol Mullins Hayes, Generative Artificial Intelligence and Copyright: Both Sides of the Black Box, Univ. ofWash. -The Info. Sch., 2023).

8.5. Findings from Coding

The analysis of the dataset revealed common themes and subcategories in prompt subjects. These themes encompassed a wide range of topics, indicating diverse user preferences in prompt creation. Additional coding categories encompassed parameters such as background, style, and realism, shedding light on users' preferences and the AI's capabilities (Carol Mullins Hayes, Data coding results, see Appendix B for detailed breakdown and examples of coded prompts and identified themes, 2023).

8. 6. Discussion

The examination of Midjourney prompts underscores the skill and creativity involved in crafting effective prompts. These prompts serve as crucial inputs guiding AI-generated artwork and raise pertinent questions about copyright ownership and attribution in AI-assisted creation. As AI technology continues to evolve, the legal landscape surrounding copyright and derivative works will likely require ongoing adaptation to accommodate these advancements.

8.7. Limitations and Future Work

While this study provides valuable insights, its scope is constrained by data availability and methodological limitations. Future research could expand the dataset, incorporate user perspectives, and explore evolving AI technologies' implications for creative expression and copyright law.

CONCLUSION

This study has examined the complex legal, ethical, and societal challenges posed by generative artificial intelligence (GAI) within U.S. copyright law. The findings highlight the urgent need for clearer statutory and judicial guidance on human authorship standards, derivative work status, and the role of user intent in AI-generated creativity. Policymakers and courts should consider adopting a compulsory licensing framework for AI training datasets, clarifying the threshold of human creative input for copyright eligibility, and providing guidance on the application of derivative work principles and the legal significance of user direction in AI-generated outputs. Together, these measures would promote innovation while safeguarding creative rights. Future research should further explore international harmonization of copyright approaches to GAI, as well as empirical studies on how creators, users, and industry actors navigate this evolving legal landscape.

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