The Human Authorship Requirement in AI-Generated Works: A Comparative Analysis of Copyright Protection Frameworks

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Abstract

Generative artificial intelligence has brought challenges to traditional copyright frameworks. These frameworks have long required human authorship as a key condition for protection. This paper focuses on how different jurisdictions deal with copyright protection for AI-generated works that involve little human input. It analyzes recent court decisions and new policy developments in three major regions: the United States, the European Union, and some selected Asian jurisdictions. Through this analysis, the paper identifies emerging patterns in legal practices. Most jurisdictions still keep the human authorship requirement. They refuse to give copyright protection to works created purely by AI systems. However, there are significant differences between these regions. These differences mainly lie in how they treat works made through human-AI collaboration and how they allocate copyright rights for such works. The paper concludes that policymakers now face an urgent challenge. They need to establish clear guidelines to define the minimum level of human contribution required for copyright protection. At the same time, these guidelines must balance three aspects: encouraging technological innovation, protecting the rights of human creators, and keeping consistency with existing copyright principles.

1. Introduction

Generative artificial intelligence tools have transformed creative industries. Systems like ChatGPT, DALL-E, and Stable Diffusion can produce text, images, music, and other creative works at unprecedented speed and scale[1]. The legal community faces urgent questions about whether these outputs deserve copyright protection. This issue carries significant economic implications for technology companies, creative professionals, and content users alike. The global market for AI-generated content continues to expand rapidly, making resolution of these legal questions increasingly critical for all stakeholders.

Traditional copyright doctrine assumes human authors create protected works. The Berne Convention recognizes authors as natural persons who exercise intellectual judgment in creating literary and artistic works[2]. This anthropocentric foundation permeates copyright systems worldwide. However, modern AI systems can generate outputs without direct human oversight during the creation process. These capabilities challenge fundamental assumptions about authorship and creativity in copyright law. The disconnect between traditional legal frameworks and contemporary technological realities creates substantial uncertainty for businesses and creators who deploy AI tools in their work.

Recent court decisions demonstrate the practical urgency of these questions. The United States Copyright Office has rejected multiple registration applications for AI-generated works, citing the absence of human authorship[3]. Courts in Europe and Asia have issued conflicting rulings on similar questions. This doctrinal uncertainty creates risks for businesses investing in AI technology. It also affects creators who use AI tools as part of their creative workflows. Companies face potential liability issues when using AI-generated content in commercial products. Individual creators struggle to determine whether their AI-assisted works qualify for copyright protection.

This paper examines how different legal systems approach copyright protection for AI-generated content. The analysis focuses on three key questions. First, what level of human contribution suffices to establish authorship of AI-assisted works? Second, should purely autonomous AI outputs receive any form of legal protection? Third, how should rights be allocated when multiple parties contribute to the final output through different roles in the AI creation process? These questions require careful analysis because they affect fundamental copyright principles while determining practical rules for emerging technologies.

The paper proceeds in four parts. Part 2 examines the doctrinal foundations of the human authorship requirement in copyright law. Part 3 analyzes recent judicial and administrative decisions from major jurisdictions. Part 4 explores

emerging policy frameworks and legislative proposals. Part 5 discusses implications for future copyright reform and offers recommendations for policymakers. This structure allows systematic exploration of both theoretical foundations and practical applications of copyright law to AI-generated works.

2. The Human Authorship Requirement in Copyright Doctrine

2.1 Historical Foundations

Copyright law historically connects authorship to human creativity and intellectual labor. Early copyright statutes protected works created by human minds. The concept of authorship assumed a natural person exercised creative choices in producing the work. This principle reflects philosophical theories that link property rights to human labor and personality expression. John Locke's labor theory of property influenced copyright development by suggesting that creators deserve rights in works produced through their intellectual efforts.

Courts consistently affirmed this requirement throughout the twentieth century. In Burrow-Giles Lithographic Co. v. Sarony, the U.S. Supreme Court held that copyright protection extends only to works created by human authors[4]. The court emphasized that an author must be a person who creates an original work through intellectual invention. Later cases reinforced this principle across different types of works and media. The Naruto monkey selfie case in the Twenty-First Century illustrated the continuing vitality of the human authorship requirement when courts rejected copyright claims for photographs taken by an animal.

The requirement serves multiple policy objectives. It ensures that copyright incentivizes human creative activity. It prevents indefinite protection periods that would arise if non-human entities could hold copyrights in perpetuity. It maintains coherence with moral rights doctrines that recognize authors' personal connections to their works. These rationales support the continued relevance of the human authorship requirement in contemporary copyright systems. The economic incentive theory of copyright assumes that human creators require protection to encourage investment in creative production. This assumption becomes problematic when AI systems can generate valuable content without human creative input.

Some scholars challenge whether the human authorship requirement remains appropriate in the AI era[5]. They argue that copyright should protect valuable creative outputs regardless of creation method. They contend that denying protection to AI outputs fails to incentivize AI development and creates free-rider problems. However, other scholars respond that extending copyright to non-human creators would fundamentally alter copyright's nature and potentially expand protection beyond reasonable limits.

2.2 The Originality Standard

Copyright protection requires that works exhibit originality. Courts define originality as independent creation with a minimal degree of creativity. The standard does not demand novelty or artistic merit. However, it requires that the author make creative choices rather than mechanically reproducing existing material. This standard connects directly to human authorship because it assumes creative decision-making by a conscious agent. The originality requirement distinguishes copyrightable works from products of routine skill or mere labor.

Scholars debate whether AI systems can satisfy originality requirements. Sun argues that current AI systems lack the conscious intentionality necessary for genuine creativity[6]. The systems process training data through statistical pattern recognition rather than making deliberate aesthetic choices. This distinction matters because copyright law traditionally rewards intentional creative expression rather than random or mechanical outputs. Neural networks optimize outputs based on training data patterns and loss functions rather than expressing aesthetic visions or communicating ideas.

Different jurisdictions apply varying thresholds for originality. European Union law requires works to reflect the author's personality through free and creative choices[7]. Common law countries generally apply lower thresholds, requiring only minimal creativity. These differences affect how courts assess AI-generated works. A jurisdiction with high originality standards may deny protection to works where human contribution seems limited, while lower thresholds might accommodate greater AI involvement. The EU's personality-based approach presents particular challenges for AI outputs because AI systems lack legal personality and cannot express personal characteristics through creative choices.

The originality standard also intersects with questions about derivative works. When AI systems modify existing copyrighted material, the outputs may lack sufficient originality to constitute protected derivative works. Courts must determine whether AI transformations represent creative reinterpretation or mere mechanical processing. This analysis becomes particularly complex when AI systems blend multiple sources in generating outputs. The transformative nature of AI outputs raises questions about whether they infringe source materials or create new original works eligible for independent protection.

3. Judicial and Administrative Approaches to AI-Generated Works

3.1 United States Jurisprudence

The U.S. Copyright Office has taken a firm position against protecting purely AI-generated works. In its guidance documents, the Office states that copyright requires human authorship. It rejects registration applications where AI

systems generate works without significant human creative control [8]. This position aligns with established judicial precedents regarding non-human authors. The Office emphasizes that the Copyright Act's text and legislative history demonstrate congressional intent to limit protection to human-authored works.

The Thaler v. Perlmutter case exemplifies this approach. Stephen Thaler sought copyright registration for artwork created by his AI system called DABUS. The Copyright Office refused registration because the work lacked a human author. The District Court and Court of Appeals both affirmed this decision[9]. The courts emphasized that the Copyright Act's text and history demonstrate that only humans can be authors. The Federal Circuit noted that extending copyright to non-human creators would require congressional action rather than judicial interpretation. The court found no ambiguity in the statute's human authorship requirement that would permit judicial expansion.

The Copyright Office has also addressed AI-assisted works in recent guidance. It distinguishes between works where AI serves as a tool controlled by humans and works generated autonomously by AI[8]. When a human exercises creative control over the process and makes meaningful creative choices, the resulting work may qualify for protection. The human author owns copyright in the creative elements they contributed, but not in AI-generated portions beyond their control. This distinction requires case-by-case analysis of the specific creative process and the nature of human contributions.

The Zarya of the Dawn case illustrates this nuanced approach. Kristina Kashtanova created a graphic novel using AI-generated images from Midjourney. The Copyright Office initially granted registration but later reconsidered. It ultimately protected the text and arrangement that Kashtanova created, but not the individual AI-generated images. This decision reflects a functional approach that examines specific creative contributions rather than categorically excluding all works involving AI. The Office found that Kashtanova's selection and arrangement of images, combined with original text, constituted sufficient human authorship for the compilation as a whole.

Recent litigation regarding AI training data raises additional copyright questions. Authors and visual artists have sued AI companies for allegedly infringing copyrights through unauthorized use of training data[10]. These cases address the input side of AI copyright issues rather than output protection. Courts must determine whether training AI models on copyrighted works constitutes fair use. These decisions will significantly affect AI development because companies rely on large training datasets that often include copyrighted material. The outcomes may influence whether companies can continue current training practices or must seek licenses for training data.

3.2 European Union Framework

European copyright law emphasizes the author's personality in determining originality. The Court of Justice of the European Union requires works to reflect free and creative choices that express the author's personal touch[7]. This standard presents challenges for AI-generated content because AI systems lack personality in the legal sense. European courts have generally denied copyright protection to works created without human creative input. The personality-based approach reflects continental European copyright traditions that emphasize the author-work relationship as a form of personal expression.

The EU AI Act addresses intellectual property issues related to AI training and outputs. The legislation requires AI providers to maintain transparent records of training data, including copyrighted materials used in training datasets[11]. However, the Act does not resolve questions about copyright protection for AI outputs. Member states retain authority to apply their own copyright standards to AI-generated works. The Act focuses primarily on safety, transparency, and fundamental rights issues rather than intellectual property protection. Its transparency requirements may indirectly affect copyright disputes by making it easier to identify unauthorized use of copyrighted training data.

A German court decision in 2024 provided significant precedent for the region. The Hamburg Regional Court ruled that training AI models on copyrighted works may fall within text and data mining exceptions under EU law[12]. The decision clarified that copyright holders must actively opt out of such uses rather than requiring opt-in consent. This ruling affects the inputs side of AI copyright issues but does not address protection for AI outputs. The decision sparked debate about whether existing text and data mining exceptions adequately address AI training or whether new legislation is needed.

Some EU scholars have proposed alternative frameworks for protecting AI outputs. These proposals include sui generis rights similar to database protection or neighboring rights for AI-generated works. Such approaches would provide limited protection without disturbing traditional copyright doctrine. However, no EU member state has yet adopted such frameworks through legislation. The European Parliament has discussed these issues but has not reached consensus on whether new forms of intellectual property protection are necessary or desirable for AI outputs.

3.3 Asian Jurisdictions

Asian jurisdictions have adopted varied approaches to AI-generated works. A Chinese district court in 2019 recognized copyright in an AI-generated news article, assigning ownership to the AI developer[6]. The court found that the developer made creative choices in designing the system and selecting training data. This decision reflects a more flexible approach that considers AI developers as authors when they exercise sufficient control over the creative process. The ruling has generated substantial academic commentary but does not represent settled Chinese law on this issue.

Higher courts have not yet addressed these questions definitively.

Japan takes a technology-neutral approach to copyright protection. Japanese law does not explicitly require human authorship in its statutory text[4]. Courts have indicated that works meeting originality requirements may receive protection regardless of the creation method. This framework could accommodate AI-generated works that demonstrate sufficient originality. However, Japanese courts have not yet fully tested this approach with purely autonomous AI outputs. The Japanese approach reflects broader policy goals of promoting AI development and technological innovation.

The United Kingdom maintains a unique provision for computer-generated works. The Copyright, Designs and Patents Act 1988 protects computer-generated works and assigns authorship to the person making arrangements for their creation. This provision predates modern generative AI but could potentially apply to AI-generated content. UK courts have not yet clarified how this provision interacts with newer AI technologies that operate with less direct human control. The provision raises questions about what constitutes sufficient arrangement of AI systems to establish authorship. It remains unclear whether simply prompting an AI system qualifies as making necessary arrangements or whether more substantial involvement is required.

4. Emerging Policy Frameworks and Legislative Proposals

4.1 The Collaborative Creation Model

Some scholars propose treating AI-human creation as a collaborative process. Under this model, humans who provide prompts, select outputs, and make post-generation edits could qualify as co-authors[1]. The model requires identifying sufficient human contribution to meet originality standards. This approach aligns with existing joint authorship doctrine while acknowledging AI's role in the creative process. Proponents argue that the model provides flexibility to accommodate different levels of human involvement while maintaining connection to traditional authorship concepts.

Critics argue that this model sets the bar too low for human contribution. They contend that simply prompting an AI system or selecting among generated options lacks the creative judgment traditionally required for authorship. The model might extend copyright protection to outputs that primarily reflect AI capabilities rather than human creativity. This tension reflects broader debates about how copyright law should adapt to increasingly capable AI systems. Some critics worry that recognizing minimal human contributions as authorship could effectively extend copyright protection to AI outputs through the back door.

The collaborative model faces practical challenges in determining authorship. Multiple parties often contribute to AI-generated works through different roles. One party may develop the AI system, another provides training data, a third crafts prompts, and a fourth selects and edits outputs. Courts must determine which contributions qualify as authorship and how to allocate rights among multiple contributors. Existing joint authorship doctrine may not adequately address these novel scenarios. Traditional joint authorship requires each contributor to make independently copyrightable contributions with intent to merge their work into a unitary whole. Applying these requirements to AI-assisted creation raises difficult questions about the independent copyrightability of prompts and other preparatory inputs.

4.2 Sui Generis Rights Proposals

Some commentators advocate creating new forms of intellectual property protection specifically for AI outputs. These sui generis rights would operate outside traditional copyright frameworks. They could provide limited protection without requiring human authorship[5]. The EU database directive offers a model for this approach, granting rights to database makers based on investment rather than creativity. Similar rights could reward investment in AI development while avoiding conflicts with copyright's authorship requirements.

Proponents argue that sui generis rights would encourage AI development while maintaining copyright's integrity. Companies could invest in AI systems knowing their outputs receive some legal protection. These rights could feature shorter protection terms than traditional copyright, reflecting the reduced human creative input. They might also include broader fair use exceptions to prevent excessive control over AI-generated content. The approach would recognize AI's economic value while preserving copyright doctrine for human-authored works.

Critics raise concerns about creating parallel protection systems. New rights could complicate an already complex intellectual property landscape. They might fragment international copyright harmonization efforts. Some scholars argue that if AI outputs lack sufficient human creativity for copyright, they should remain in the public domain rather than receiving alternative protection. This position reflects concerns about over-protecting content at the expense of public access and follow-on creativity. Critics also note that companies developing AI systems can rely on trade secrets and first-mover advantages to capture returns on their investments.

4.3 Public Domain Approaches

Some scholars advocate placing purely AI-generated works in the public domain. This approach maintains doctrinal consistency by denying protection to works lacking human authorship[6]. It promotes access to AI-generated content and supports cumulative innovation. The approach avoids creating new legal rights while respecting copyright's traditional boundaries. Proponents argue that denying protection to AI outputs aligns with copyright's fundamental

purposes of encouraging human creativity.

Opponents argue that public domain treatment fails to incentivize AI development. Companies may underinvest in generative AI if they cannot control resulting outputs. This concern assumes that intellectual property protection drives innovation in AI development. However, other factors like first-mover advantages and trade secrets may provide sufficient incentives regardless of copyright protection for outputs. Companies developing AI systems can capture value through service models, proprietary platforms, and continuous improvement rather than relying on content copyrights.

The public domain approach also raises questions about commercial fairness. Companies spend substantial resources developing AI systems and curating training data. Allowing free-riders to exploit AI outputs without restriction might undermine these investments. However, similar arguments could apply to many innovations that ultimately benefit from patent or trade secret protection rather than copyright. The debate continues regarding whether AI-generated content requires special treatment beyond existing intellectual property frameworks. Some commentators suggest that competition law rather than intellectual property law should address potential free-rider concerns in AI markets.

5. Implications for Policy and Future Reform

5.1 Doctrinal Coherence

Copyright policy regarding AI must maintain coherence with existing doctrinal foundations. Any framework for protecting AI outputs should align with established principles regarding authorship, originality, and the scope of exclusive rights. Radical departures from these principles risk destabilizing copyright law more broadly. Policymakers should prefer incremental adaptations over wholesale revisions. Maintaining doctrinal consistency helps ensure predictability and coherence across different types of creative works and technologies.

Courts can develop workable standards through case-by-case analysis[2]. They can examine the specific nature and degree of human contribution in each instance. This common law approach allows flexible adaptation to evolving technology. It avoids premature legislation that might become obsolete as AI capabilities advance. However, this gradualist approach may create uncertainty for businesses requiring predictable legal frameworks. The tension between flexibility and predictability requires careful balancing as courts develop AI copyright jurisprudence.

Legislators should consider establishing clear thresholds for human contribution sufficient to establish authorship. These standards should focus on creative decision-making rather than mere mechanical operation of AI tools. They should account for the reality that most creative processes now involve some technological assistance. The goal should be distinguishing between tools that execute human creative vision and systems that generate outputs with minimal human guidance. Clear legislative standards would reduce litigation costs and provide greater certainty for creators and technology companies.

5.2 International Harmonization

AI-generated content crosses borders instantly through digital networks. Divergent national approaches create uncertainty and transaction costs. International harmonization would benefit creators, users, and technology companies[3]. However, achieving consensus faces significant challenges given different copyright traditions and policy priorities. Countries disagree about fundamental questions regarding AI's role in creative processes and whether outputs deserve legal protection.

The World Intellectual Property Organization has initiated discussions on AI and intellectual property policy. These discussions could provide a foundation for future international agreements. However, countries disagree fundamentally about whether AI outputs should receive any protection. Some prioritize encouraging AI development through intellectual property rights, while others emphasize public access and free expression. These divergent policy priorities reflect different economic interests and cultural values regarding creativity and authorship.

Regional harmonization may prove more achievable than global consensus. The European Union could establish unified standards across member states. Asian countries with active AI development might collaborate on compatible frameworks. These regional approaches could eventually inform broader international convergence. The process may require decades of experimentation and diplomatic negotiation. Historical precedent suggests that international copyright harmonization proceeds slowly through iterative treaty negotiations and mutual learning from different national approaches.

5.3 Practical Recommendations

Copyright offices should develop detailed guidelines for assessing AI-generated works[8]. These guidelines should address common scenarios and provide examples of sufficient versus insufficient human contribution. Clear guidance reduces uncertainty for applicants and promotes consistent decision-making. The guidelines should be updated regularly as AI technology and creative practices evolve. Administrative guidance can provide practical clarity while preserving judicial flexibility to address novel situations.

Courts should consider adopting functional tests that examine the creative process rather than focusing solely on final outputs. These tests would evaluate whether humans made meaningful creative decisions during work creation. They would distinguish between using AI as a creative tool and allowing AI to autonomously generate content. Such tests

provide flexibility while maintaining connection to traditional authorship concepts. Functional analysis could examine factors like the specificity of prompts, the extent of output selection and modification, and the overall creative control exercised by humans.

Policymakers should require transparency regarding AI involvement in work creation[11]. Copyright registrations could include disclosures about AI tools used and the extent of AI contribution. These disclosures would help courts and users understand the human creative input. They would support fair dealing analysis by revealing the nature of protected works. Mandatory disclosure requirements would need careful design to avoid deterring AI adoption or creating administrative burdens. Disclosure could operate similarly to registration formalities in other intellectual property systems.

Education initiatives should help creators understand copyright implications of AI use. Professional organizations, bar associations, and creative guilds can provide guidance about protecting rights in AI-assisted works. Educational resources should explain how to document creative processes and demonstrate human authorship. These efforts support compliance while encouraging legitimate AI adoption in creative workflows. Training programs could help creators understand best practices for maintaining sufficient creative control when using AI tools.

6. Conclusion

The human authorship requirement remains a fundamental principle in copyright law across most jurisdictions. Recent judicial decisions consistently deny protection to works generated autonomously by AI systems. However, courts and policymakers struggle with works created through human-AI collaboration. The legal community has not yet developed consensus on the level of human contribution necessary to satisfy authorship requirements. This uncertainty creates practical challenges for businesses and creators who deploy AI technologies in creative production.

Different policy approaches offer varying advantages and drawbacks. The collaborative creation model extends existing joint authorship doctrine but may lower protection thresholds excessively. Sui generis rights proposals provide tailored protection but risk fragmenting intellectual property law. Public domain approaches maintain doctrinal consistency but may fail to incentivize AI development adequately. Each approach reflects different value judgments about the appropriate balance between access and control in the AI context.

Future copyright policy must balance multiple competing interests. It should encourage AI innovation while protecting human creators. It should promote access to information while respecting legitimate commercial interests. It should maintain doctrinal coherence while adapting to technological change. These goals sometimes conflict, requiring difficult trade-offs and policy compromises. The challenge lies in developing frameworks that serve copyright's fundamental purposes while accommodating technological capabilities that challenge traditional assumptions.

The path forward likely involves incremental adaptation rather than revolutionary reform. Courts will develop standards through case-by-case analysis. Legislators will respond to specific problems as they arise. International organizations will facilitate coordination among national systems. This evolutionary process will continue for years as AI capabilities advance and creative practices evolve. Historical experience with previous technological disruptions suggests that copyright law adapts gradually through iterative refinement of existing doctrines.

The ultimate goal should be copyright rules that serve the public interest in promoting creativity and knowledge. Whether AI-generated works receive protection matters less than ensuring that copyright law adapts thoughtfully to technological change. The challenge lies not in finding perfect solutions but in developing workable frameworks that balance competing values while remaining responsive to future developments. Success will require collaboration among policymakers, courts, scholars, and industry stakeholders to develop practical solutions grounded in sound legal principles.

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