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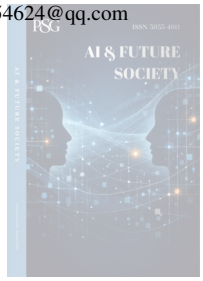
AI & Ethics

A Study on the Boundaries of Copyright Protection for AI-Generated Content

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Abstract
Generative artificial intelligence (AI) challenges traditional copyright law by questioning authorship, originality, and infringement standards. This paper explores the copyright boundaries of AI-generated content through theoretical analysis, comparative study, and case review. It finds that outputs created without human input should not be protected, while human–AI collaborative works may qualify for limited rights. Drawing on practices in the United States, United Kingdom, and European Union, the study proposes institutional pathways for China, including clarifying the legal status of AI-generated works, introducing a "special protection right," refining originality thresholds, and expanding fair use. The paper argues for a balanced copyright framework that promotes innovation, preserves the public domain, and adapts to the digital era.

Keywords: Artificial intelligence; Copyright; AI-generated content; Originality; Fair use; Legal reform

1. Introduction

In recent years, the rapid development of Generative Artificial Intelligence (GenAI) has profoundly transformed human creativity. Representative models such as OpenAI's ChatGPT, Midjourney's image-generation tool, and Suno AI's music creation system are capable of producing large-scale, diverse, and high-quality content within a very short time span. These contents range from literary works, graphic design, film scripts, and musical compositions to academic writing, thereby demonstrating a new type of creativity that transcends the functions of traditional information-processing tools. From a quantitative perspective, the daily output of texts, images, and audiovisual works generated by AI far exceeds the production capacity of human creators, significantly expanding the supply and dissemination boundaries of cultural products.

However, the "creativity" of AI differs fundamentally from traditional human intellectual labor. Copyright law has long been built upon the principle of "author-centrism," which requires that only works independently created by natural persons can receive legal protection. The Berne Convention, the TRIPS Agreement, and the Chinese Copyright Law all emphasize that copyrightable works must embody originality—an essence derived from human intellectual activity. The emergence of AI-generated content (AIGC) disrupts this foundational premise: when human participation is minimal or absent, can such outputs still be recognized as works? This question lies at the heart of current debates on the boundaries of copyright protection.

Both international and Chinese practices indicate that this issue is no longer a theoretical assumption but an urgent legal challenge. In 2022, the U.S. Copyright Office explicitly refused to register the comic *Zarya of the Dawn* because its images were generated solely by AI without human authorship. This landmark case sparked global debate on the legal status of AI-generated works. Similarly, Chinese courts have begun exploring originality and copyright ownership in cases involving AI-generated poems and automated news articles. For instance, in 2019, the Beijing Internet Court ruled that an AI-generated article lacking human originality could not constitute a "work" under the Copyright Law, despite its formal completeness (Beijing Internet Court, 2019).

The complexity deepens because the training of GenAI typically relies on large datasets that contain numerous copyrighted works. If training data are used without authorization, secondary infringement risks may arise. Moreover, when AI-generated outputs resemble existing works, infringement disputes may also be triggered. As AI-generated content proliferates, these legal issues not only affect the rights and obligations of creators, users, and platforms but also have broader implications for the cultural industry and digital economy.

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Against this backdrop, traditional copyright law faces unprecedented pressure. On the one hand, excluding AI-generated works entirely from protection could leave a large volume of cultural products outside the law, undermining incentives for innovation. On the other hand, granting copyright indiscriminately to AI outputs risks "copyright inflation," which could obstruct public interest and knowledge sharing. The central challenge is therefore to strike a balance between technological advancement and the protection of human authors' rights.

By examining the copyright boundaries of AI-generated content, this study aims to provide a reference framework for future legislation and judicial decision-making, thereby enhancing the scientific rigor and authority of legal practice. Additionally, the research seeks to contribute to the reconstruction of copyright theory by rethinking core concepts such as "work," "author," and "originality." This endeavor not only responds to the challenges posed by AI but also aligns with the broader trajectory of intellectual property law development. At the international level, it may further facilitate dialogue and coordination, enhancing China's voice in global digital governance and intellectual property rulemaking.

2. Literature Review

2.1. International Research Progress

2.1.1. Copyright Attributes of AI-Generated Content

The debate over whether AI-generated content qualifies as a "work" in the copyright sense has roots in Western legal discourse. In the UK, the introduction of "computer-generated works" in the Copyright, Designs and Patents Act of 1988 expanded the concept of authorship beyond humans (United Kingdom, 1988). In earlier U.S. scholarship, Samuelson (1985) examined the inheritance of ownership in outputs generated by computer programs, ultimately arguing that the user of a generator program should be considered the author on legal and policy grounds. More recently, Gervais (2019) examined the notion of an AI as "machine author," concluding that outputs lacking human creative choices belong in the public domain.

Meanwhile, U.S. practice, notably via the Copyright Office, adheres strictly to the "human authorship requirement," consistently refusing to register works produced without meaningful human involvement. This underscores the dominant view that originality—and thus copyright—must be human-derived.

2.1.2. Copyright Ownership

The ownership of AI-generated works sparks competing international perspectives. Some commentators argue that developers—who provide the algorithms, datasets, and computational infrastructure—should hold rights. Others emphasize the significance of the user's creative input, such as complex prompt design and parameter tuning, advocating for the user as rightful owner (Gervais, 2020). Still others see a place for public domain designation when no human creativity is discernible.

Internationally, the U.S. remains steadfast in granting rights only to human-authored works. The European Union, while progressing legislation through instruments like the AI Act, has been cautious about explicitly extending copyright or ownership. A 2024 analysis highlights the need for legislative updates to align copyright norms—such as the Berne Convention and EU law—with evolving AI creativity frameworks.

2.1.3. Infringement and Liability

A growing concern in international scholarship involves infringement and liability around AI. Unauthorized inclusion of copyrighted works in training datasets potentially constitutes infringement, especially when system outputs closely resemble original materials. Scholars differ on accountability: some assign liability to users issuing infringing prompts; others extend it to platforms and model developers for their control over training and deployment processes.

2.2. Chinese Research Progress

China's engagement with AI and copyright law began in earnest around 2017, expanding rapidly across three principal dimensions.

2.2.1. Copyright Attributes of AI-Generated Content

Chinese scholars generally affirm that human originality remains a prerequisite for copyright. A dominant "non-protectionist" view holds that AI-generated materials, devoid of human intellectual labor, should fall outside copyright's scope (Wang, 2017). Another "limited protection" position offers conditional recognition if substantial human creativity—through prompt design or operational choices—is involved. A third, novel approach introduces neighboring rights, proposing a sui generis rights scheme to balance industrial innovation with legal adaptation.

2.2.2. Copyright Ownership

Multiple ownership frameworks have emerged:

- **Developer Ownership Theory**: Rights vest in developers who provide technical and informational resources.
- **User Ownership Theory**: Rights belong to users due to their creative direction and input.
- **Joint Ownership Theory**: Shared rights allocated through contracts or statutory rules.
- **Public Domain Theory**: Outputs that lack human creativity should immediately enter the public domain.

These views reflect efforts to harmonize innovation incentives with equitable allocation of rights.

2.2.3. Protection Boundaries and Liability Issues

Chinese scholarship further explores nuanced adaptations:

- **Minimum Originality Threshold**: Advocates for recognizing "weak originality" in AI outputs with minimal human input.
- **Extension of Fair Use**: Proposals suggest broadly permitting AI-generated content in educational and research settings to serve public interest.
- **Infringement and Liability Allocation**: Debates center around whether users or platforms should bear primary or joint liability for infringing AI outputs.

Overall, Chinese analysis significantly contributes to institutional design and normative frameworks, though its theoretical development and empirical grounding are still evolving relative to international discourse.

3. Research Methodology

This study investigates the boundaries of copyright protection for AI-generated content, a subject that involves both fundamental legal theories and cross-disciplinary considerations of technology and institutional practice. To ensure systematic and rigorous analysis, the following research methods are employed.

3.1. Normative Analysis

Copyright law is structured around two core concepts: originality and authorship. AI-generated content directly challenges these requirements. This study first applies normative analysis to interpret relevant provisions of the Chinese Copyright Law and judicial interpretations regarding the definition of "works," author qualification, and fair use. It then evaluates the applicability and limitations of these provisions in scenarios involving AI-generated content. A comparative perspective is also incorporated, examining parallel provisions in the U.S. Copyright Office's policy statements, the U.K.'s Copyright, Designs and Patents Act, and draft legislation in the European Union, thereby revealing institutional similarities and divergences.

3.2. Comparative Legal Study

Given the absence of a globally unified standard for the legal status of AI-generated content, foreign legislative and judicial practices provide valuable reference points for China. Through comparative legal study, this research systematically reviews the American "human authorship" principle, the U.K.'s recognition of "computer-generated works," and the EU's emphasis on balancing data rights with public interests. These models are analyzed against the backdrop of different legal cultures and policy objectives, with an assessment of their applicability within the Chinese legal framework.

3.3. Case Study Method

The growing number of judicial and administrative cases concerning AI-generated outputs offers an empirical foundation for analysis. Representative cases—such as the *Zarya of the Dawn* copyright registration dispute in the U.S., the Chinese "AI Poetry" case, and the *Getty Images v. Stability AI* lawsuit—are selected for detailed examination. By analyzing judicial reasoning and value judgments, this study identifies emerging trends and challenges in the protection of AI-generated content. This empirical dimension helps ground theoretical inquiry in practical realities.

3.4. Empirical Observation and Interdisciplinary Perspective

The functioning of generative AI is inseparable from its technological mechanisms. Therefore, the study adopts a limited interdisciplinary approach, drawing insights from computer science to explain prompts, model training, and generation processes. This facilitates a more accurate understanding of the role of "human involvement" in determining authorship. Furthermore, the study observes the interaction between legal regulation and market practices, including compliance policies adopted by AI platforms, to illustrate how legal norms and industrial governance coevolve.

3.5. Value Analysis and Normative Construction

The fundamental purpose of copyright law lies in balancing the interests of creators with those of the public. Building upon theoretical debates and judicial practices, this study employs value analysis to evaluate the impact of different protection models on innovation incentives, industrial growth, and public interest. The ultimate objective is to propose a normative framework of "limited protection with reasonable restrictions" tailored to China's legal context, thereby offering theoretical and policy-oriented support for the improvement of its copyright system.

4. Legal Analysis of the Attributes of AI-Generated Content

AI-generated content (AIGC) represents a novel category of creative output that diverges from both traditional human works and purely mechanical reproductions. Its legal attributes remain highly uncertain, posing a central challenge for copyright law. This chapter examines the features of AIGC, its distinctions from traditional works, and divergent scholarly views to clarify its legal positioning within the copyright system.

4.1. Characteristics of AI-Generated Content

4.1.1. Automation and Large-Scale Production

Generative AI relies on massive datasets and complex neural network models, enabling the production of vast quantities of texts, images, music, and videos within extremely short timeframes. Unlike human authors who create step by step, AI operates through algorithmic processes, reflecting "calculation" rather than "creation." While this reduces production costs significantly, it also raises concerns regarding the absence of human intellectual labor, traditionally viewed as the cornerstone of originality.

4.1.2. Uncertainty and Randomness

AI outputs are inherently unpredictable. Even when identical prompts are input, the system may generate different results. This probabilistic generation contrasts with human creative processes, which are typically guided by purpose and aesthetic judgment. Legally, this raises questions: if outcomes cannot be directly controlled by human will, can they still be classified as products of human intellectual creation?

4.1.3. "Weak Originality"

Originality is the defining criterion of copyright law. Traditionally, originality requires independent intellectual effort and personalized expression. AIGC, however, often recombines existing data in patterned ways, producing outputs that may appear novel but essentially reflect statistical generalizations. Thus, these outputs exhibit "weak originality," which challenges the traditional threshold of independent creativity required under copyright law (Samuelson, 1986).

4.2. Distinctions from Traditional Works

4.2.1. Divergent Standards of Originality

Traditional works must reflect an author's individuality through choices and arrangements. By contrast, AIGC results from algorithmic processing rather than subjective artistic judgment. For instance, in the *Zarya of the Dawn* case, the U.S. Copyright Office explicitly denied registration for images independently generated by AI, emphasizing the absence of human creative contribution.

4.2.2. Author Identity Recognition

Most copyright regimes define the author as a natural person. Article 11 of the Chinese Copyright Law explicitly states that authorship belongs to natural persons who create the work. This excludes machines or algorithms from legal recognition as authors. Because AIGC is often detached from direct human control, identifying the "author" becomes problematic. If the natural person requirement is rigidly upheld, AI outputs cannot qualify as works under copyright law.

4.2.3. Blurring of the Idea–Expression Dichotomy

Copyright law traditionally distinguishes between unprotectable "ideas" and protectable "expressions." AIGC complicates this distinction. For example, AI painting tools trained on Van Gogh's works may generate outputs highly similar to his style. These fall into a gray area between "expression" and "material," blurring the line between permissible inspiration and unlawful derivative reproduction.

4.3. Divergent Scholarly Perspectives

4.3.1. Non-Protection Theory

The non-protection theory asserts that AI-generated outputs fail to meet the basic requirements of copyright protection due to the absence of human creativity. The U.S. Copyright Office reaffirmed this stance in its 2023 policy statement, clarifying that any work entirely produced by AI without human intervention is ineligible for copyright protection (U.S. Copyright Office, 2023). Proponents argue that copyright's legitimacy lies in incentivizing human creation, not in granting rights to machine-generated outputs. Recognizing AI-generated works could lead to copyright inflation and shrinkage of the public domain.

4.3.2. Limited Protection Theory

The limited protection theory suggests that copyright should depend on the degree of human involvement. If users contribute significantly through prompt design, parameter settings, or post-editing, such works may reflect sufficient creativity to warrant protection. This reasoning is reflected in the 2019 "AI Poetry Case" decided by Shenzhen Nanshan Court, which acknowledged that user input and selection manifested sufficient aesthetic judgment to recognize authorship.

4.3.3. Analogy Protection Theory

The analogy protection theory seeks institutional solutions by drawing on existing frameworks. The U.K.'s Copyright, Designs and Patents Act (1988), Section 9, provides that where a work is computer-generated with no human author, "the person by whom the arrangements necessary for the creation of the work are undertaken" shall be treated as the author. Some Chinese scholars suggest adopting a similar approach to recognize developers or users as authors by special provision (Gervais, 2019). While this offers practical feasibility, it risks unfair allocation of rights and potential abuse.

5. Current Status of Copyright Protection for AI-Generated Content

The legal protection of AI-generated content (AIGC) poses a fundamental challenge to copyright systems worldwide. Different jurisdictions, shaped by their legal traditions, policy orientations, and institutional frameworks, have adopted divergent approaches. Overall, China is at a stage of judicial experimentation, the United States adheres strictly to human-centered principles, the European Union emphasizes balancing rights with data governance, and the United Kingdom recognizes "computer-generated works" through statutory provisions.

5.1. China

5.1.1. Legislative Framework: Emphasis on Originality and Human Intellectual Contribution

The Chinese Copyright Law (2020 revision), Article 2, defines a work as an intellectual achievement in the fields of literature, art, and science that is both original and capable of being expressed in a certain form. Both originality and intellectual achievement are interpreted as requiring independent human thinking and creative activity. This legislative approach implies that works fully generated by AI without human involvement cannot be classified as copyrightable works.

5.1.2. Judicial Practice: Emphasis on Human Participation

Chinese courts have gradually encountered disputes concerning AIGC. In a notable 2019 case before the Beijing Internet Court, a company claimed copyright over financial news articles automatically generated by an AI platform. The court held that while the text was generated by AI, the user played a substantive role in data input, topic setting, and editing. Accordingly, the articles demonstrated a sufficient degree of originality and qualified for copyright protection.

Another influential case is the "AI Poetry Case" decided by Shenzhen Nanshan Court, which recognized AI-generated poems as works due to the user's substantive contribution through thematic selection, parameter setting, and result filtering. Both cases suggest that Chinese judicial practice leans toward recognizing human–AI collaboration, treating human participation as a decisive factor in determining authorship.

5.1.3. Academic and Policy Discourse

Chinese academia remains divided. Some scholars argue for strictly maintaining the traditional human authorship standard to prevent copyright inflation. Others advocate a limited protection model, granting rights where human involvement is substantial. Meanwhile, policy documents issued by the National Copyright Administration and the Ministry of Industry and Information Technology have acknowledged the regulatory challenges posed by AIGC, though explicit legislative responses remain absent.

Thus, China's current approach is characterized by "judicial advancement with legislative lag," producing a high degree of uncertainty

regarding AIGC protection standards.

5.2. International Practices

5.2.1. United States: Strict Human Authorship Standard

The United States has long adhered to the principle of human authorship. In its 2023 policy statement, the U.S. Copyright Office reaffirmed that works generated solely by AI without human creative input do not qualify for copyright protection.

The landmark *Zarya of the Dawn* case illustrates this position. While the textual elements of the comic were authored by a human, its images were produced by Midjourney. The Copyright Office refused to register the images, emphasizing that they lacked human authorship. Similarly, in *Thaler v. Perlmutter*, a U.S. federal court ruled that AI-generated images could not be registered because "copyright law protects only human creations" (Thaler v. Perlmutter, 2023). This firmly establishes the U.S. as holding the strictest position globally on human authorship.

5.2.2. European Union: Balancing Data Rights and Public Interests

The European Union has adopted a cautious and balanced approach. While its copyright law framework still requires human originality, recent legislation such as the Digital Services Act (DSA) and the proposed Artificial Intelligence Act (AI Act) focus more on data governance, algorithmic transparency, and accountability than on copyright attribution.

Policy debates within the EU have suggested alternative mechanisms, such as introducing neighboring rights or establishing transitional "AI-generated rights" to balance industrial innovation with public interest. However, no binding legislation currently recognizes AI-generated content as copyrightable works.

5.2.3. United Kingdom: Recognition of "Computer-Generated Works"

The United Kingdom takes a more pragmatic stance. Section 9(3) of the Copyright, Designs and Patents Act (1988) provides that when a work is generated by a computer without a human author, "the author shall be taken to be the person by whom the arrangements necessary for the creation of the work are undertaken." This statutory framework explicitly accommodates computer-generated works.

In practice, although few cases have tested this provision, industries widely interpret it as granting rights to companies or individuals who make the necessary arrangements for AI output. For instance, if a company uses an AI platform to produce musical compositions, it may claim copyright as the "necessary arranger." The U.K. model thus provides a functional legal solution without abandoning the human authorship paradigm (CDPA, 1988).

5.3. Comparative Insights

Comparative analysis of these jurisdictions yields several insights:

- **U.S. Model: Clear Boundary Protection**. The U.S. approach reinforces copyright clarity and safeguards the public domain, preventing the inflation of rights. However, it provides little incentive for AI industries, which may suffer from a lack of copyright-based rewards.
- **U.K. Model: Practical Balance**. By recognizing "computer-generated works," the U.K. provides a workable balance between legal tradition and technological innovation. Nonetheless, this risks concentrating rights in the hands of platforms or developers, potentially fostering monopolistic practices.
- **EU Model: Rights–Public Interest Balance**. The EU prioritizes data governance and accountability, maintaining flexibility amid rapid technological development. The downside, however, is that the copyright status of AIGC remains ambiguous, creating uncertainty for industry stakeholders.
- **Chinese Model: Judicial Experimentation, Legislative Lag**. China's courts emphasize human involvement, offering partial protection to AIGC under a "human–AI collaboration" framework. Yet, the lack of unified legislative guidance generates inconsistencies and uncertainty, underscoring the need for statutory reform.

6. Copyright Ownership of AI-Generated Content

The ownership of copyright in AI-generated content (AIGC) constitutes a central issue following the debate on whether such outputs can be classified as works. Even if AIGC is deemed copyrightable under certain conditions, the crucial question remains: who should be recognized as the rightful owner? Unlike traditional works, the production of AIGC involves multiple stakeholders—developers, platform operators, users, and, in some cases, third-party rights holders whose works were used as training data. This multiplicity of actors creates complexity in ownership allocation, requiring careful legal and policy consideration.

6.1. Potential Rights Holders

6.1.1. Developers: Creators of Algorithms and Platforms

Developers invest substantial financial, technical, and human resources to build and train AI models capable of generating text, images, and music. From an "investment" perspective, they provide the conditions necessary for content generation. If developers were denied rights, their incentive to improve algorithms and platforms could diminish.

However, from the standpoint of copyright theory, developers do not directly participate in generating specific expressions. Their contribution lies in enabling creation rather than producing individualized works. Thus, granting them direct authorship risks contradicting the principle of "author-centered originality."

6.1.2. Users: Protagonists of Prompting and Creative Intention

Users play a critical role by designing prompts that guide AI outputs. The complexity of prompts ranges widely: while some merely issue simple commands (e.g., "generate a five-character poem"), others incorporate highly detailed instructions (e.g., "compose a poem in the style of Wang Wei, depicting autumn scenery in Jiangnan, using delicate imagery"). When prompts reflect unique creative choices, users arguably contribute sufficiently to qualify as authors.

Nevertheless, the challenge lies in distinguishing between trivial instructions and creative prompts. If user input lacks originality and the AI independently produces the expression, recognizing users as authors may undermine the originality requirement.

6.1.3. Third-Party Rights Holders: Providers of Training Data

Many AI models rely on massive datasets that include copyrighted works. If such works are used without authorization, the rights of original authors may be infringed. The *Getty Images v. Stability AI* lawsuit in the U.S. exemplifies this problem, where Getty alleged that its images were unlawfully used to train Stable Diffusion. While third-party rights holders may not claim authorship of AI outputs, they may assert negative rights, such as prohibiting unauthorized use of their works in training datasets.

6.2. Ownership Models

6.2.1. Developer Ownership Model

This model allocates rights to developers, on the grounds that algorithms and platforms are decisive in content generation. Advantages include:

- Encouraging innovation: Developers would have stronger incentives to improve AI technology.
- Preventing free-riding: Users would not be able to exploit platforms without contributing significantly.

However, concentrating rights in developers risks monopolization, especially given that large AI models are dominated by a few major companies. This could restrict users' creative space and hinder public access to knowledge resources.

6.2.2. User Ownership Model

This model recognizes users as authors if their prompts demonstrate sufficient creativity. Its strengths include:

- Consistency with copyright principles: Authorship is linked to human creativity and motivation.
- Alignment of rights and contributions: Rights are allocated to those who directly shape the outcome.

The difficulty lies in measuring the originality of prompts. Where user input is minimal and outputs are largely AI-driven, granting copyright to users risks protection without genuine creativity.

6.2.3. Public Domain Model

Some scholars advocate placing AI outputs directly in the public domain, arguing that such works lack human creativity. This approach:

- Preserves the openness of the public domain, avoiding copyright inflation.
- Reduces ownership disputes by eliminating the need for allocation.

However, this model weakens industrial incentives, as neither developers nor users would enjoy exclusive rights. Without market exclusivity, investment in AIGC may be discouraged.

6.2.4. Special Rights Model

To balance innovation and public interest, some scholars propose establishing a "special rights" regime. This would resemble neighboring rights or database rights, granting limited protection for AI-generated content. Features may include:

- Shorter protection term (e.g., five years);
- Narrower scope of rights, limited to reproduction or distribution;
- Eligibility restricted to organizations or users with substantive contributions, rather than traditional authorship.

This transitional model, discussed in EU policy debates, could encourage industrial investment while avoiding excessive copyright expansion (Gervais, 2019).

6.3. Evaluation

The multiplicity of stakeholders and models demonstrates that no single solution is sufficient. While developer ownership fosters innovation, it risks monopolization; user ownership aligns with creativity but is difficult to apply consistently; public domain allocation ensures openness but undermines incentives; and special rights offer balance but complicate the copyright system.

For China, where judicial practice emphasizes human involvement, the most viable approach may be a hybrid model: recognizing user authorship where prompts demonstrate originality, while considering special protection mechanisms for outputs lacking human creativity. This would encourage both innovation and public access, in line with the dual goals of copyright law.

7. The Boundaries of Copyright Protection for AI-Generated Content

The determination of whether AI-generated content (AIGC) qualifies for copyright protection, and if so, to what extent, is one of the most contentious issues in both academia and practice. If the scope of protection is too broad, it may cause copyright inflation, stifling knowledge dissemination and shrinking the public domain. Conversely, if protection is too narrow, it may discourage investment and innovation by developers and users. Establishing reasonable boundaries of protection is therefore essential to harmonizing technological development with the objectives of copyright law.

7.1. Establishing the Boundaries of Protection

7.1.1. Minimum Threshold of Originality

Originality is the cornerstone of copyright law. Traditionally, a work must reflect the author's individualized intellectual creation. In the case of AIGC, originality should be assessed at a minimum threshold. Where human involvement—such as prompt design, editing, or aesthetic judgment—is present, even at a limited level, copyright protection may be justified. By contrast, content generated entirely by AI without substantive human input should not be deemed copyrightable.

7.1.2. Creative Contribution of Prompts

Prompts (user instructions) play a crucial role in generative AI outputs. Complex prompts often embody a user's distinctive conceptualization, aesthetic orientation, and linguistic creativity. For instance, a prompt specifying "depict Paris streets under the starry sky in Van Gogh's style" reflects a higher degree of originality than a generic instruction to "generate a starry night scene." When prompts themselves constitute creative contributions, the resulting output may qualify as a human–AI

collaborative work attributable to the user.

7.1.3. Recognition of Human–AI Collaboration

The decisive factor in determining copyright protection lies in the degree of human–AI collaboration. If users merely provide trivial commands and the AI independently generates outputs, such results should not be recognized as works. However, where users make substantive creative choices—such as modifying melodies in AI-generated music or editing AI-produced images—the final output may be classified as a collaborative work, deserving copyright protection (Shenzhen Nanshan Court, 2019).

7.2. Rights Limitations and Balancing Mechanisms

7.2.1. Fair Use in the AI Era

The doctrine of fair use (or statutory limitations) must adapt to the AI context. Educational, research, commentary, and news-reporting uses of AIGC should typically fall under fair use, especially when they are noncommercial and do not harm the normal market value of the works. This ensures that copyright does not unduly hinder social access to knowledge.

7.2.2. Public Interest Orientation

The ultimate purpose of copyright lies in promoting cultural dissemination and balancing public and private interests. Outputs fully generated by AI without human input should generally enter the public domain. This prevents the excessive privatization of cultural resources and reduces the transaction costs of copyright licensing.

7.2.3. Risks of Overprotection

If legislation were to extend full copyright to all AI-generated outputs, several risks could emerge:

- **Copyright Abuse**: Platforms or developers could restrict user access, consolidating monopolistic power.
- **Innovation Suppression**: Subsequent creators may be hindered from building upon AI-generated works.
- **Obstacles to Knowledge Flow**: The sheer volume of AI outputs, if copyrighted, would significantly increase costs of knowledge acquisition.

Therefore, establishing protection boundaries requires a principle of restraint, ensuring that rights remain proportionate to human creative contributions.

7.3. Defining Infringement Liability

7.3.1. Infringement in Training Data

One of the most disputed issues concerns whether the use of copyrighted works as training data constitutes infringement.

- **Pro-Infringement View**: Copying works for training represents a reproduction act and should require authorization.
- **Non-Infringement View**: Training is a technical intermediate step that does not involve public dissemination and thus may fall under fair use.

The *Getty Images v. Stability AI* case is a prime example, where Getty argued that its protected images were used in training datasets without authorization. The outcome of such cases will shape the compliance boundaries of AI training.

7.3.2. Infringement in Generated Outputs

When AI outputs are substantially similar to existing works, courts may assess infringement based on two factors:

- **Access**: Whether the AI model had exposure to the copyrighted work during training.
- **Substantial Similarity**: Whether the generated output replicates the expression of the original work rather than merely adopting its idea or style.

For example, if an AI system produces paintings that closely reproduce Van Gogh's unique style and composition, the results may be considered derivative works requiring authorization.

7.3.3. Allocation of Liability

Liability for infringement may fall on different actors:

- **User Liability**: Users who intentionally input infringing prompts (e.g., "generate a Disney character identical to Mickey Mouse") should bear primary responsibility.
- **Platform Liability**: Platforms that fail to implement reasonable filtering or monitoring mechanisms may assume secondary liability.
- **Developer Liability**: Developers may be responsible if design flaws in the algorithm systematically produce infringing content.

This allocation mirrors the principle of intermediary liability in internet law, balancing neutrality with a duty of care.

8. Pathways for Institutional Improvement

The copyright challenges posed by AI-generated content (AIGC) are both theoretical and practical. Current copyright frameworks reveal signs of obsolescence and inadequacy in addressing the realities of AI-driven creativity. To balance innovation incentives with public interest, institutional improvements must be pursued across legislative, judicial, industrial, and societal dimensions.

8.1. Legislative Dimension

8.1.1. Clarifying the Legal Status of AI-Generated Content

The Chinese Copyright Law currently lacks explicit provisions on the legal status of AI-generated works, leading to inconsistent judicial practices. Future legislative reforms could introduce a "computer-generated works" provision, drawing on Section 9 of the U.K.'s Copyright, Designs and Patents Act (1988), which recognizes the "person making necessary arrangements" as the author in the absence of human authorship. Within China's legal framework, this may evolve into the concept of "human–AI collaborative works," designating users, developers, or other contributors with substantive input as right holders.

8.1.2. Establishing a "Special Protection Right"

For outputs generated fully by AI without human creative involvement, traditional copyright protection is inappropriate. However, placing all such outputs directly in the public domain risks undermining industrial incentives. A transitional mechanism—a "special protection right"—could be introduced, similar to neighboring rights or database rights. This right would provide:

- Short-term protection (e.g., five years);
- Limited scope (restricted to reproduction and distribution);
- Designated beneficiaries (developers or users with investment or organizational input).

This system could stimulate industrial investment while preventing excessive expansion of copyright monopolies.

8.1.3. Expanding the Scope of Fair Use

The widespread use of AI requires a rethinking of fair use provisions. Future legislation should:

- Expand applicability to include technological uses such as algorithmic training under certain conditions;
- Introduce balancing tests requiring courts to consider both innovation incentives and rights protection;
- Draw on U.S. jurisprudence, which applies a four-factor test—purpose, nature, amount, and market effect—to guide flexible applications of fair use (U.S. Copyright Office, 2023).

This framework would help reconcile the tension between technological development and copyright restrictions.

8.2. Judicial Dimension

8.2.1. Refining Standards for Originality

Originality remains the decisive factor for copyrightability. Judicial authorities should clarify:

- Minimum originality: Works with user contributions in prompt design, editing, or selection may qualify;
- Substantive contribution: Simple, trivial prompts should not suffice; meaningful human input must be demonstrated.

This approach prevents the overextension of copyright while protecting genuine human–AI collaboration.

8.2.2. Strengthening Case Guidance Mechanisms

Given the novelty and complexity of AIGC disputes, traditional judicial interpretations may be insufficiently responsive. A stronger system of case guidance could enhance consistency. For instance, the Supreme People's Court could issue guiding cases clarifying:

- Which types of prompts or collaborations constitute originality;
- Which outputs should enter the public domain.

This would reduce legal uncertainty and bridge legislative gaps in the short term.

8.2.3. Diversifying Remedies

Beyond monetary damages, judicial remedies should include:

- Mandatory disclosure: Requiring explicit labeling of AI-generated content;
- Behavioral injunctions: Prohibiting unauthorized use of sensitive datasets;
- Reduced damages: Preventing abuse of litigation in cases involving noncommercial or borderline uses.

Such pluralistic remedies can maintain fairness and avoid excessive reliance on punitive compensation.

8.3. Industrial and Societal Dimension

8.3.1. Promoting Industry Self-Regulation and Platform Compliance

Platforms should establish compliance mechanisms, including:

- Watermarking and labeling: Embedding markers such as "AI-generated" to enhance transparency.
- Content filtering: Preventing outputs that closely replicate copyrighted works.
- Algorithmic transparency: Providing limited disclosure of data sources without revealing trade secrets.

These practices reduce infringement risks and foster public trust.

8.3.2. Establishing a Centralized Licensing Database

A key step toward compliance in training data usage is the creation of a centralized copyright licensing system. By cooperating with collective management organizations, publishers, and media companies, developers could obtain lawful training materials at reasonable cost. This system would mirror collective licensing in the music industry, streamlining permissions and ensuring fair compensation for rights holders.

8.3.3. Strengthening International Cooperation

Given the inherently cross-border nature of AIGC, international coordination is crucial. Measures may include:

- Multilateral negotiations under the World Intellectual Property Organization (WIPO) to develop global principles for AI and copyright;
- Bilateral dialogues among China, the U.S., and the EU to establish minimum consensus standards;
- Cross-border copyright tracking systems enabling interoperability of registries.

Such initiatives would help mitigate jurisdictional conflicts and foster global governance in digital copyright.

9. Conclusion

The rapid development of generative artificial intelligence has fundamentally challenged the traditional framework of copyright law. By producing large volumes of text, images, and other creative outputs, AI

not only disrupts the classical concepts of originality and authorship but also reshapes the balance between innovation incentives and public interests. Against this backdrop, the boundaries of copyright protection for AI-generated content have become a focal point of both academic debate and judicial practice.

This study has demonstrated that the central difficulty lies in reconciling the human-centered nature of copyright law with the non-human agency of AI systems. On the one hand, copyright must remain faithful to its foundational requirement of originality, which presupposes human intellectual creation. On the other hand, technological realities reveal that human actors—whether developers, platform operators, or users—frequently play substantive roles in the production of AI outputs. The law must therefore evolve to recognize these hybrid forms of creativity without undermining the integrity of the copyright system.

The comparative analysis shows that jurisdictions have adopted divergent approaches: the United States strictly maintains the human authorship principle; the United Kingdom pragmatically recognizes computer-generated works; the European Union emphasizes governance and accountability; and China advances judicial experimentation in the absence of explicit legislative reform. Each approach has its own advantages and risks, but all share a common goal of striking a balance between encouraging technological innovation and protecting the public domain.

For China, the path forward requires a multifaceted institutional response. At the legislative level, clarification of the legal status of AI-generated works and the possible establishment of a special rights regime would provide greater certainty. At the judicial level, refined standards of originality and a stronger case guidance system would ensure consistency and predictability. At the industrial and societal levels, platform compliance, industry self-regulation, and international cooperation would mitigate risks of abuse and enhance public trust.

Ultimately, the goal is to not simply extend or deny copyright protection to AI-generated content, but to construct a nuanced framework that balances protection with openness. Such a framework should encourage human–AI collaboration, safeguard the public domain, and adapt copyright law to the realities of the digital age. By doing so, copyright can continue to fulfill its core mission of promoting creativity, innovation, and cultural dissemination in an era increasingly shaped by artificial intelligence.

Author Contribution

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Competing Interest Declaration

The author declares that, to their knowledge, they have no financial, personal, or professional relationships that could be construed as a potential competing interest regarding the work described in this manuscript.

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