Comparative Study and Insights on Copyright Protection of AIGC from an International Perspective

Qi Jiang
Faculty of Law, The University of Sydney, Sydney 2006, Australia

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Abstract: As artificial intelligence technology develops rapidly, Artificial Intelligence-Generated Content (AIGC) has gradually permeated literature, art, and music, and changed the method of content creation and the landscape of the traditional cultural industry. However, the lightning-fast proliferation of AIGC has brought about many legal issues related to copyright protection. Based on an international viewpoint, this paper explores AIGC copyright protection's legal positions and practices in the United States, the European Union, and China. The paper argues for the reforms of the standards of originality, reformulating diversified copyright attribution rules, and strengthening international cooperation and coordination, in order to build a copyright protection framework suit for AIGC. Hoping to offer a glimpse and guidance for China and other countries to adjust their AIGC copyright legal systems to promote the harmonious development of technology and law to encourage the innovation and sustainable development of cultural and creative industries.

1 INTRODUCTION

1.1 Research Background

With the speed of development of artificial intelligence technology, from literature, art, journalism, advertising, music, and film to more fields, Artificial Intelligence-Generated Content (AIGC) is gradually infiltrating everything, deeply changing content creation methods and traditional cultural industry patterns. AI-generated text, images, and music are increasingly applied in commerce and daily life. For example, ChatGPT is widely used in content creation and customer service, while models like DALL-E and MidJourney are applied in cover art design, advertising, and entertainment (Li et al., 2024).

But the swift proliferation of AI-generated content has also accompanied many legal problems, with disputes over their copyright protection occupying the forefront of academia and industry. Most of the current system of traditional copyright protection is built on the basis of factors like human creators creating ideas in an original manner and personally having rights over them. This framework fails against the characteristics of AIGC works which lack a specific "human author", do not follow the regular "creation process" (the "algorithms", big data, training models, etc.), and therefore make it difficult to determine their "originality" and "authorship"(Cai et al., 2024).

1.2 Research Subject and Significance

The purpose of this study is to address the copyright protection issues of AI-generated content, with a special focus on the legal issues related to originality determination and it is respective patent. AI-generated content has brought forth new types of creation and led to a lot of debates and controversies in the copyright field. Thus, this research focuses on studying the legislation and practices of various countries in copyright protection of AIGC, whether and how AIGC can be combined with the current copyright system, and legal advice for promoting the international copyright protection system.

The theoretical significance lies in addressing these issues, and their resolution will have an enormous impact on policy-making, shaping the creation of content that will influence the future development of the content creation industry. The clarification of AIGC copyright attribution encourages innovative applications of AI while safeguarding the aforementioned legitimate rights of content creators. This study aims to provide legal references for China and other countries protecting copyrights in the AIGC era, promoting the mutual

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development of technology and law, and continuing to innovate and grow healthily within cultural and creative industries.

2 CHARACTERISTICS OF AI-GENERATED CONTENT AND COPYRIGHT DISPUTES

2.1 Technical Characteristics of AI-Generated Content

AI-generated content is realized by algorithms, big data, and deep learning technologies which allow AI to work on a large amount of data within a short time delivering the content in various s for-mats like text, images, and music. As a result, AIGC possesses special technical properties, i.e. massive data processing, creative content generation, cross-modal integration, and a certain extent of cognitive interaction capability (Li et al., 2023). The creation process of AI-generated content typically involves several key steps:

- Data Training: AI models require extensive data for training, which can include text, images, audio, etc.. The richness and creativity of AI-generated content are dependent on the quality and quantity of training data they use.
- Model Generation: AI models use deep learning algorithms like Generative Adversarial Net-works (GANs) or Natural Language Processing models like Transformers, to learn patterns from input data, and generate outputs (China Academy of Information and Communications Technology, 2022).
- User Input and Algorithm Output: Specific instructions or parameters are provided by the users and AI computes to deliver content that matches the requirements (China Academy of Information and Communications Technology, 2022). This process differs from conventional human creation, as it relies on re-expression through data and algorithms, without subjective creativity or emotional input.

The creation characteristics of AIGC fundamentally differ from human creative processes:

- Impersonality: Because of its emptiness of subjective intent and emotional expression by the author, AI-generated content lacks the personalized elements characteristic of human creation.
- Imitative Nature Based on Training Data: At its core, AI-generated content is an imitation and a recombination of its training data. Its "creativity" is largely in an innovative and reassembly of data already available, and not the creation of totally new ideas (China Academy of Information and Communications Technology, 2022).

2.2 Core Issues in Copyright Disputes

AI-generated content sparks multiple disputes in the realm of copyright protection, primarily focusing on the following aspects:

2.2.1 Originality Determination

In copyright law, originality is one of its core requirements. Traditional copyright law requires that works be independently created by human authors and that they have at least some creative expression. However, this requirement presents huge challenges to AIGC. The extent to which AI-generated content meets the originality requirement is contentious because AI-generated content is produced by learning and imitating existing data (Wu, 2024).

However, some believe that while AI output can be considered novel, it essentially consists of randomizing a pre-existing arrangement of data, all the while trying to imitate, and therefore infringing on the human thoughtful effort and skills necessary to drive traditional copyright law. As a result, it lacks originality on the legal level (Yu, 2024). Still, others argue that in the case of some AI-generated works, their expression forms creative works as new and original as to merit copyright protection.

2.2.2 Authorship and Copyright Ownership

A second important issue is the identification of the "author," a principal concept of copyright law. Given that AI is not a natural person and does not have legal personality, determining the ownership of AI-generated content is challenging. There are three predominant views on this issue:

Attribution to AI Developers: Some argue that the copyright should belong to the company or developer that created and trained the AI system since it provides the technological scaffolding (or basis) for the exploitation of content (Abbott, 2018).

Attribution to Users: Others argue that those who type a particular instruction and dictate creative direction to the content generating process are to be treated as authors, because those are critical contributions (Wang, 2014).

Public Domain: A third view suggests that AI-generated content should enter the public domain because it does not meet the traditional definition of authorship, and no human creation is directly involved. In its Compendium of U.S. Copyright Office Practices (Third Edition), the U.S. Copyright Office explicitly states that works that do not have contributions from human authors cannot be registered as copyrighted. For example, the guidelines make it clear that "works generated solely by machines independently" cannot be copyrighted (U.S. Copyright Office, 2021).

3 INTERNATIONAL COMPARISON: LEGAL ATTITUDES TOWARD COPYRIGHT PROTECTION OF AIGC

3.1 The Legal Stance and Practice in the United States

The key to copyright protection in the United States is the recognition of a “human author”. The U.S. Copyright Act protects only the work of human beings (U.S. Copyright Office, 2021). In the Thaler Case, however, this stance was explicitly confirmed (U.S. Copyright Office Review Board, 2022). The U.S. Copyright Office turned down an application for a copyright on an AI-generated image in the Thaler Case, as the work was deemed to be lacking human authorship and originality. The case involved an AI system developed by Stephen Thaler that produced an image titled A Recent Entrance to Paradise. The core reason for the rejection was the absence of any human creative input in the work.

In other cases, like the Zarya of the Dawn case in 2022, the U.S. courts held that human arrangement and editing could be protected, but AI-generated elements without human inputs could not be copyrighted (U.S. Copyright Office, 2023). These cases demonstrate that the United States enforces a high threshold for 'human creativity' in determining copyright eligibility, emphasizing human involvement.

The U.S. legal system remains firmly rooted in the principle of "human creation," and the refusal to extend copyright protection to AI-generated works has fueled the conversation between industry and legal scholars. Many technology enterprises and academics are now calling for the amendment of existing laws to include AI generated content under copyright protection as a way to motivate further development and application of AI technologies (Ropat, 2020).

3.2 The Legal Attitude and Practice in the European Union

The European Union (EU) has treated the copyright protection of AI-generated content in a cautious way, and the core principles can be found throughout its Copyright Directive (European Parliament and Council, 2019). According to the Directive, a work must reflect "the author’s personality" and require human intelligence and individualized expression during the creation process. Judicial practice in the EU has also emphasized this principle. For instance, in the Eva-Maria Painer v. Standard Verlags GmbH case, the court noted that originality should reflect the creator’s freedom and individuality (Court of Justice of the European Union, 2011). This case sets an important reference for future disputes related to AI generated content.

In practice, the EU emphasizes the importance of human intervention. Generally, the generation of AIGC is not considered as a copyright protected work if it processes the information by the algorithms and data and without any form of human involvement. But if a user feeds the generative model creative instructions, dynamically manipulates the outputs, or edits the generated results, the content that results may be copyrighted.

Moreover, the EU is looking at establishing new regulatory requirements regarding attribution and use of AI generated content. The 2020 White Paper on Artificial Intelligence further clarified the standard for human involvement in AI-generated content (European Commission, 2020). The thinking is to make sure this balances out protection of creators" rights with enabling AI innovation. Through these provisions and practices, the EU emphasizes the central role of human creators in the creative process, seeking to balance the protection of creators" rights with the promotion of AI technology innovation.

3.3 The Legal Practice in China

In China, the current Copyright Law clearly requires works to be original and created by natural persons, legal persons or other organizations. This standard makes it challenging in practice whether AI-

generated content can be copyrighted. In recent years, this issue has been widely discussed in Chinese academic circles and judicial practice departments.

In the existing judicial practice, a case adjudicated by Nanshan District People's Court in Shenzhen at the end of 2019 and widely reported in early 2020, namely the case of Tencent Dreamwriter generating financial articles, provides a reference for this issue (Shenzhen Nanshan District People's Court, 2019). In this case, Tencent created a financial news report by using its AI tool "Dreamwriter" to automatically generate the news report, and in this process, people are used to bringing the topics, supplying data, editing and publishing the news. The court found that because of all this substantial human intervention and creative input to AI-generated content, the final text constitutes an "original" work subject to copyright law.

This topic has also been examined in depth by academic circles. In fact, some scholars argued it is necessary to define and evaluate the creative labor and decision-making input of humans in an AIGC creation process for ensuring reasonable copyright protection of AIGC works at legal level. At the same time, the Chinese government has raised the strategic importance of AI in policy manuals like the New Generation of Artificial Intelligence Development Plan (2017) and encouraged a better intellectual property protection system (State Council, 2017). Academic institutions, relevant research institutions and the National Copyright Administration also continue to organize discussions and exchanges to provide references for future legislation and judicial practice.

In general, judicial practice in China tends to consider AI merely as a help in creation, rather than a creator in itself for the creation of a work. This does not mean that AI-generated content cannot be subject to copyright protection as the AI-generated content may in fact have substantial human contribution to the creative process. This trend offers a first path of copyright protection in AIGC and opens up space for future amendments or interpretations of related laws.

3.4 Attitudes in Other Countries

The United Kingdom: The United Kingdom is one of the few countries in the world where AI-generated content is treated very differently; under the Copyright, Designs and Patents Act (the UK copyright law), AI-generated content is considered as a developer's copyright or a user operating an AI if he or she has contributed "creatively" to the creation (Leung, 2021).

Japan: Japan takes a relaxed attitude, encourages the open use of AI-generated content, and takes a more conservative stance on copyright issues, that is, AI-generated content generally does not enjoy copyright protection in the traditional sense, but data protection can be achieved through other means (Okuyama, 2020).

4 LEGAL INSIGHTS: CONSTRUCTING A COPYRIGHT PROTECTION FRAMEWORK ADAPTED TO AIGC DEVELOPMENT

4.1 Redefining the Standard of Originality

In view of the copyright disputes caused by AIGC, it is particularly important to redefine the "originality" standard in copyright law. To address the copyright disputes arising from AIGC, redefining the standard of "originality" in copyright law is particularly important. Traditionally, originality requirements focus on humans" intellectual labour and subjective judgement in the creative process, however for the content created by AI, its "creativeness" lies next to the reorganization and creation of data by the algorithm. In order to achieve that, copyright law may expand its originality standard too and grant copyright protection to AI-generated content.

In particular, the law may take "human intervention" as one of the main criteria for judgment in attribution to originality. The U.S. Copyright Office's guidelines for the registration of AI-generated content are quite clear: human creative contributions form a considerable part of obtaining copyright registration (U.S. Copyright Office, 2023). "Human intervention" is a key measure of originality embodied in the official guidelines. Copyright protection for such works should be possible as long as it can be shown that humans guided, selected, or supervised the creation of AI content. The re-definition could push human AI co-creation and create new avenues for more advancement in technology.

4.2 Diversified Rules for Copyright Ownership

The current controversy over the attribution of copyright to AIGC focuses on three options for AI

developers, users, or the public domain. In order to better adapt to this new form of creation, the law can try to construct diversified copyright ownership rules, which are detailed according to different creative scenarios.

AI Developer: If the AI-generated content relies heavily on the developer's technical and algorithmic design, the copyright can be vested in the developer. Such rules can incentivize companies and technologists to invest in the development and optimization of AI systems.

Users: For users who have played an important guiding role in the creative process, the law may consider them as copyright owners. Such rules can stimulate the enthusiasm of users to use AI for personalized creation.

Public domain: If AI-generated content is completely devoid of human participation and its creation process can be replicated by anyone, then such content should be put into the public domain for free use by society. This will ensure that technological achievements are shared and utilized to the maximum extent possible by the public.

4.3 International Cooperation and Coordination

As the application of AI technology is characterized by globalization, countries should also coordinate the copyright protection of AIGC as far as possible to avoid transnational legal disputes caused by unclear copyright ownership.

First, under the umbrella of the WIPO (World Intellectual Property Organization), there is a first amendment of existing international copyright treaties to make clear what AI generated content is and what the appropriate standards are for protection thereof. Second, countries can establish AIGC best practice guidelines in copyright protection that all countries can jointly use as a reference for national legislation and justice so countries can implement laws in accordance with technological innovation.

4.4 Legal Insights for China

By comparing the copyright practices of different countries, China can improve the copyright protection of AIGC in the following aspects:

Improve the legal system: In light of the actual situation of technological development in China, copyright protection rules for AI-generated content should be clarified as soon as possible, especially for content created by AI and human collaboration, clear identification standards and ownership rules should be provided in the law.

Establish a rapid response mechanism: Due to the wide application and rapid change of AI-generated content, China's copyright protection system has established a corresponding rapid response mechanism to respond to possible new copyright disputes in a timely manner and ensure that the law ADAPTS to the pace of technological development.

Promote the integration of technology and law: To strengthen the legitimate use of AIGC content, governments should foster cooperation between the AI Industry and the legal community to establish technical tools such as blockchain-based content traceability systems to facilitate copyright protection and monitoring (WIPO, 2020).

5 CONCLUSION

This paper discusses the copyright protection of AIGC, especially from the perspective of originality identification, copyright attribution and international legal comparison. The emergence of AIGC poses a major challenge to traditional copyright law, and the current copyright protection framework faces shortcomings in dealing with AI-generated con-tent, especially because AI lacks human subjective awareness and creative intent, which complicates the determination of originality and authorhood.

Through international comparison, it can be seen that different countries have adopted different attitudes towards AIGC copyright protection, with the United States and the European Union emphasizing the direct creative input of human beings, while some countries such as the United Kingdom and Japan taking a relatively relaxed stance. Based on this analysis, this paper puts forward some suggestions, such as redefining the originality standard, constructing diversified copyright ownership rules, and strengthening international cooperation and coordination, so as to promote the modernization of copyright protection system.

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