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Copyright Ownership and Legal Challenges of Works Generated by Artificial Intelligence

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Abstract. The rapid development of artificial intelligence (AI) technology has driven a new round of scientific and technological revolution. AI, leveraging neural networks, generates artistic works that circulate globally through the Internet. However, the international community lacks consensus on the copyright ownership for AI-generated work, hindering global fair competition in intellectual property. Currently, the discussions mainly focus on whether AI has the qualification of a subject of rights and how to determine the human copyright holder. This paper, using the comparative and the normative analysis method, examines the legislation and judicial practice of the international community in the ownership of copyright of AI-generated works. It concludes that copyright should vest in human subjects, and further proposes a solution to regard the users of AI as the object of copyright ownership. It also emphasizes strengthening the international coordination of the copyright ownership system for AI-generated works.

Keywords: AI-generated works, copyright, ownership of rights, international coordination

1. Introduction

The term “artificial intelligence (AI)” was first proposed by computer scientist Alan Turing in 1950 [1]. For a long time, AI has mainly served as a human auxiliary tool, undertaking high-risk, high-precision and highly repetitive technical work, and rarely involved in the field of literary and artistic creation. In recent years, with the continuous development and application of technologies such as machine learning, artificial neural networks and generative adversarial networks, significant progress has been made in AI technology and its related industries [2]. In traditional intellectual property fields such as literature and art, AI has gradually broken through the limitations of auxiliary tools and acquired the ability to independently generate relevant content. The application of AI in the field of literary and artistic creation has brought new challenges to the intellectual property legal system. Among them, how to determine the ownership of rights of AI-generated works has become a key issue that urgently needs to be solved.

This paper explores the issue of the copyright ownership of AI-generated works. By clarifying the relevant ownership of rights, it discusses the new challenges posed by the development of science and technology to the intellectual property system. This paper aims to provide theoretical support and practical guidance for the current intellectual property legal system, and also promote the healthy development of AI technology in the field of literary and artistic creation.

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2. Legal logic of copyright ownership

2.1. Legal principles of copyright ownership

The traditional principle of copyright ownership is that copyright vests in the author, which aims to encourage creators to continuously contribute intellectual achievements and promote the prosperity of a society. Both common law system and civil law system like France and Germany adhere to this principle, recognizing the author's direct and inseparable connection to the creation of the work.

Currently, in the copyright subject system, there are two types of authors: natural person author and legal person authors. Natural persons are the factual creators who engage in creative activities and express individuality. Their authorship is determined based on personality elements, creative acts and the evaluation of natural authors. Legal person author, on the other hand, are fictitious authors created under specific legal conditions. They represent the will and responsibility of the legal entity, qualifying as authors of "works of legal entity."

2.2. Disputes over right ownership

The question of whether AI can be an author has sparked debate in academia. Proponents believe that the development of technology challenges the legal system and traditional human concepts. They advocate that recognizing AI as a copyright subject, noting that AI's dominant role in creation and its "neural network black box" nature make human tracing difficult. AI also independently generates works by simulating human neural networks. Therefore, the current copyright law needs re-evaluation and address AI-generated works. Some scholars suggest referring to the Draft Report with recommendations to the Commission on Civil Law Rules on Robotics of the European Union and endowing AI with relevant rights to its created works by creating an electronic personality or setting a set of specific rights [3].

Opponents, however, adhere to the principle of "anthropocentrism" and believe that AI cannot be authors because human intervention is indispensable in creation. Works condense human time investment and thoughts and emotions. Even if AI is regarded as an agent or employee of humans, it gives a certain legal status to non-living things, which is a huge challenge from a philosophical and ethical perspective [4]. Moreover, AI lacks self-awareness and will not be inspired to continue creating like human authors.

Regarding the human ownership object of the copyright of AI-generated works. One view is that the copyright should vest in the designer of the AI program because the intellectual input of the designer creates the AI program, thus contributing to the production of the final work. This ownership method can encourage further AI development [4]. The other view is that the copyright should vest in the AI user, as they provide initial instructions and creative intentions, which are crucial for the work's generation. This ownership method can encourage users to operate the program more actively and create new works [5]. Additionally, although the designer owns the copyright of the program itself, the user is the subject that determines the creation of the work.

2.3. Limitations of the current legal framework

The TRIPS Agreement, signed under the WTO framework, is a cornerstone of the world’s intellectual property system. However, it and the Berne Convention do not address copyright protection for AI-generated works, as AI had not yet developed to the level of autonomous creation when they were drafted. This omission reflects a new challenge posed by technological progress.

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Analysis of these agreements reveals that they do not recognize non-human entities as authors. The TRIPS Agreement stipulates in its Article 1 that the nationals shall be understood as those natural or legal persons [6]. The Berne Convention does not stipulate the scope of authors, but it clearly states that the duration of the economic rights of copyright starts from the death of the author, which means that the author is defaulted to be a natural person [7]. Thus, AI is excluded as a potential author under these conventions. In addition, AI currently lacks the ability to truly express thoughts and emotions, failing to meet the qualification requirements of copyright subjects.

Since it is impossible to clarify the copyright ownership through eligible subjects, we might as well try to directly discuss the copyright ownership of AI-generated works.

3. Comparison between international legislation and legal practice

3.1. United States

The Copyright Law of the United States stipulates that copyright in a work vests initially in the author or authors of the work [8]. However, this law does not clearly define the term “author”. In judicial practice, some courts hold that the results created by a computer vest in the designer of the computer program. In 1982, in the case of Williams Electronics Ins. v. Aritic International Ins., the United States Court of Appeals for the Third Circuit held that the video content in a game should be regarded as an object of copyright protection. Since the designer had preset the images and sounds of the video game when designing the game, this right belonged to the designer of the game. The originality of this work was generated when the designer designed the game, rather than the game images when the player was playing, and had nothing to do with the computer itself [9]. A similar conclusion was reached in the 1983 case of Midway Manufacturing Co. v. Artic International, Inc., where the United States Court of Appeals for the Seventh Circuit also granted copyright to the designer [10].

3.2. United Kingdom

According to Section 9(3) of the Copyright, Designs and Patents Act 1988 in the UK, the author of a computer-generated work shall be taken to be the person by whom the arrangements necessary for the creation of the work are undertaken [11]. Although this legal provision does not clearly specify who the person making the arrangements necessary is, it is generally considered to be the designer or user of the computer program. In UK judicial practice, there are cases where the person making the arrangements necessary has been interpreted as the designer. In the case of Nova Productions Ltd v Mazooma Games Ltd, Mr Justice Kitchin held that the electronic snooker game framework generated by Nova belongs to computer-generated works, and further believed that Jones, the designer of the computer program, designed the appearance of various elements of the game, the rules and logic for generating each framework, and wrote the relevant computer program, and was the person by whom the arrangements necessary for the creation of the works were undertaken and therefore was deemed to be the author [12].

In summary, neither the US nor the UK has clearly specified who the "author" is through legal provisions, but in the judicial practices of both the US and the UK, there are cases where the designer of the computer program has been recognized as the author of the computer-generated work. These cases indicate that under the current copyright law system, the copyright of computer-generated works tends to vest in the designers of the computer programs because the designers have made presets and arrangements for the computer-generated works.

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4. Solutions and future legislative directions

4.1. Adherence to human authors

Currently, the attitudes of each jurisdiction under the TRIPS Agreement still mainly hold that the author of the copyright of AI-generated works cannot be non-humans such as AI, and for the AI-generated works that are included in the protection, the humans behind them are also considered as authors. Current customs, rules, and even the formulation of laws are all based on "anthropocentrism". If a certain non-biological entity is rashly listed as the subject of rights in copyright law, it will not only damage the foundation of the copyright legal system, but may also cause the foundation of the legal systems around the world to shake, thus harming humans themselves.

The author believes that under the current copyright law system, the most reasonable solution is to adopt a legal fiction similar to the "work made for hire" doctrine to designating the subject of rights of AI-generated works as the human operator behind it. Through the legal fiction, the employer or the commissioning party is regarded as the author of the work, enabling a non-creator to become the author of the work in the legal sense. Regarding AI-generated works, although AI plays a more core role in the output process of the work and provides more creative elements, due to its non-human identity, it does not have the legal subject qualification under the existing legal system. Therefore, adopting a legal fiction similar to the employment principle to regard the human behind the AI-generated works as the author can better solve the problems of its author identity and the ownership of rights.

4.2. Clarification of rights ownership for AI-generated works

Currently, the main practice among the contracting parties of the TRIPS Agreement is to attribute the rights of AI-generated works to the designers or users of AI. To clarify the ownership of rights to AI-generated works, we need to make a choice between the designers and users of AI. The author believes that the author of AI-generated works should be the user, and the copyright should vest in the user of AI.

The view that the copyright of AI-generated works vests in the designer has certain rationality, but there are also defects: First, there is the problem of the double dipping of the designer. The designer already enjoys the copyright of the AI program, and obtaining the copyright of the AI-generated works will enable the designer to profit repeatedly from the same creative act. Second, there is a lack of subjective awareness on the part of the designer. The autonomous creation of AI makes it have no direct connection with the generated works, and the designer usually has no way of knowing the existence of the works, so there is a lack of necessity to provide protection for works that designers are not aware of [5]. Third, the incentive goal is blocked. If the AI designer is given the monopolistic control right over the AI-generated works, it will dampen the enthusiasm of users to create more works using the software, which goes against the purpose of the copyright system of encouraging the creation and dissemination of works.

In contrast, granting the copyright of AI-generated works to the user has more advantages. First, from the perspective of the author’s identity, the user has a closer relationship with a specific work in terms of time and space than the designer, and is the subject directly triggering the birth of the work. This arrangement has two advantages. The first advantage is that it can build a virtuous cycle. By protecting the rights and interests of users, it can promote the use of AI, thereby increasing the profits of developers, and then driving the research and development investment and product

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upgrading of AI, and finally attracting more users, realizing the sustainable development of the AI industry. The second advantage is that it can effectively avoid the difficult problem of distinguishing between AI-assisted works and AI-generated works, and avoid the identification dilemma in practical operations. Second, from the perspective of technological development, the development of the relationship between humans and machines has always been a continuous process, and it is impossible to tell when the machine first got rid of the status of an auxiliary tool and obtained complete autonomous creation ability [13]. Therefore, considering the actual operation and the possibility of future policy-making, it is a more reasonable choice to attribute the copyright of AI-generated works to the user.

4.3. Enhancement of international coordination on AI copyright ownership

The international coordination of the intellectual property system emerged in the 1880s, aiming to coordinate and unify the intellectual property systems of various countries, which have similarities but also differences. Facing the challenges brought by AI to the global intellectual property system, it is necessary to play the coordinating role of the international intellectual property system to help countries around the world jointly respond to the new challenges brought by scientific and technological development with the intellectual property system.

The WIPO has held conferences on the theme of the intellectual property system and AI technology for three consecutive years from 2019 to 2021, and there have been discussions on the question of "If copyright can be attributed to AI-generated works in whom should the copyright vest?" [14]. The WIPO needs to continue to play its role and actively follow up on the international cooperation among countries regarding the copyright ownership system for AI-generated works. At the same time, it is also necessary to achieve regional coordination through bilateral and multilateral treaties. The international intellectual property system mainly includes international conventions such as the Paris Convention, the Berne Convention and the TRIPS Agreement. These regional coordination mechanisms play an important role in the international coordination of the copyright ownership system for AI-generated works.

5. Conclusion

With the development of AI technology, AI-generated works in the art field have become works with both artistic beauty and commercial value. AI-generated works pose challenges to the current international intellectual property system and have triggered heated discussions in the academic community on the copyright ownership of AI-generated works. The copyright ownership of AI-generated works mainly includes two aspects of issues. One is the controversy over the identity of the AI as the subject of rights; the other is the controversy over the human object of ownership of the copyright of AI-generated works.

This paper believes that the reason why current jurisdictions adhere to a legal framework with humans as the main body is due to the cautious attitude towards the rapidly developing AI. Once AI is incorporated into the status of a legal subject, it may trigger ethical and moral issues between AI and human society, causing serious impacts on human society. However, the artistic value and commercial value contained in AI-generated works cannot be ignored, and it is necessary to adjust them through the copyright system. The author's identity of AI-generated works can be determined by the legal fiction, by designating the user of AI as the author of the work, and the copyright rights vest in the author. This not only conforms to the logic of copyright law but also properly solves the issue of the author's identity of AI-generated works within the framework of copyright law. In

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addition, it is necessary to strengthen the international coordination of the copyright ownership system for AI-generated works to jointly address the new challenges brought by technological development to the intellectual property system.

However, this paper does not discuss whether AI can become a qualified subject of rights. To discuss this issue in depth, it is necessary to promote dialogue and cooperation among multiple disciplines such as law, philosophy, sociology, and psychology, so as to more effectively guide the development of AI technology in the direction of benefiting humanity.

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