On the Copyright of Content Generated by Artificial Intelligence

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Abstract. While generative artificial intelligence participates in human creative activities on a large scale, it cannot be a natural human subject or an anthropomorphic subject because of its lack of rationality. However, copyright law encourages the creation of works, and under certain conditions, artificial intelligence generated content is conducive to the realization of the legislative purpose of copyright law and satisfies the objective criteria of originality of works, and therefore, such content has copyrightability. Under this premise, the attribution of artificial intelligence generated content copyright needs to be discussed. At present, there are designer's, user's and owner's views on its attribution. According to the current copyright law, in principle, the copyright of artificial intelligence generated content belongs to the user, but in special cases, it belongs to legal persons, employers, trustees and other subjects, unless otherwise agreed by the parties.

1 Introduction

With the rise of the fourth industrial revolution, big data, cloud computing, artificial intelligence and other technologies are becoming increasingly mature and deeply involved in human activities. Among them, artificial intelligence is vigorously developed and gradually deeply involved in human creative activities. For example, as early as 2015, the timeliness and accuracy of news articles generated by artificial intelligence, such as "Xiaonan" of the Southern Metropolis Daily and "Zhang Xiaoming" of Today's Headlines, are completely comparable to those of professional news industry practitioners. In 2017, "Sunshine Lost the Glass Window," a collection of poems written by Microsoft's artificial intelligence "Xiaobing," was published, which once again aroused widespread concern and discussion in all walks of life. Now, a new generation of artificial intelligence products, represented by Chat Generative Pre-trained Transformer (hereinafter referred to as ChatGPT), has appeared, which automatically generates high-quality text by "learning" a large amount of linguistic data, so that the machine is able to understand the language like a human being. The Copyright Law of the People's Republic of China (hereinafter referred to as the Copyright Law) is a law that encourages the creation and dissemination of works, and the wide application of artificial intelligence has generated a large amount of content. The copyrightability and other issues of such content should be responded by Copyright Law.

2 Clarification of the Connotation of Artificial Intelligence

As early as the 1950s, a definition of artificial intelligence had already been proposed. Marvin Minsky, the "father of artificial intelligence", defined artificial intelligence as "the science of making machines do things that humans need intelligence to do ". With the development of artificial intelligence technology, experts in the theoretical and practical circles at home and abroad have discussed the definition of artificial intelligence. Wu Handong, a famous and renowned scholar of intellectual property law in China, believes that artificial intelligence is based on data storage, which, with the help of machine algorithms, aims to simulate certain thinking processes and intelligent behaviors of human beings through computers; The European Commission's "European Report on Artificial Intelligence" issued by the European Commission defines artificial intelligence as "systems that possess intelligent behaviors, analyze the surrounding environment and automate it to a certain degree in order to achieve a specific purpose.” In summary, this paper argues that artificial intelligence refers to artificial systems that mimic human intelligence and interact with their surroundings to automate specific goals that would normally require the human mind, with no specific purpose of their own. Generative artificial intelligence technology is a form of artificial intelligence technology that refers to models and related technologies that have the ability to generate content such as text, images, audio, and video.

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3 Artificial Intelligence Cannot Be Granted Legal Subject Qualification

On February 16, 2017, the European Union legislative proposal stated that "in the long term, complex autonomous robots could have the status of e-persons, thereby acquiring a special legal status and being compensated for the damage they cause. E-personhood may apply in cases where the robot makes independent autonomous decisions or interacts with third parties in an independent manner." Subject qualification, or personality, is the qualification granted by law to a person who possesses certain conditions to become a legal "person" and thus a bearer of rights, obligations and liabilities in a legal relationship. [5] The above legislative proposal of the European Union has triggered the discussion of the international community on whether artificial intelligence should be given the qualification of legal subject. Based on the philosophical perspective and the perspective of private law theory, this paper argues that artificial intelligence cannot be given the qualification of legal subject.

3.1 Philosophical perspective on the inability of artificial intelligence to become a natural person

At present, the definition of the legal subject of natural persons of various countries is based on the profound understanding of the human nature by the German classical philosophy, among which the Kantian philosophy is representative. [6] In Kantian philosophy, rationality, self-consciousness and freedom take an important place, and rationality is the core of it. Kantian philosophy believes that human beings have two indispensable attributes. On the one hand, as an animal with flesh and blood and desires, human beings belong to nature. They are subject to the laws of nature, and in a passive state of domination. On the other hand, as creatures with advanced thinking skills, humans are rational beings. They are capable of thinking to understand how the world works and applying knowledge and technology to transform the environment. This enables human beings to transcend the constraints of the laws of nature, to shape their own development and that of society with reason as their guide, to create norms such as law and morality, and to self-regulate and become free and self-disciplined ethical subjects. [6]

3.1.1 Artificial intelligence is not rational

On the whole, according to Kant, human action consists of two aspects. The first is the relationship between human beings and things. There are two kinds of beings in the world: irrational "things", which exist on the basis of natural will, have only relative value, and can only be regarded as "means". The other is the rational "man", whose essence is emphasized as "the end in itself" and has absolute value. [7] The second is the relationship between human beings, who, because of their absolute value, are ends in themselves, not means. Therefore, in their actions, people should respect others and consider both others and themselves as ends.

In terms of the relationship between humans and things, artificial intelligence is essentially a set of artificial systems composed of data, algorithms and programs, and is a scientific and technological achievement created by human beings for the ultimate purpose of survival, reproduction and development. [8] In other words, artificial intelligence is not a rational being, which is in the state of being dominated by human beings, and is an object, a tool and a means of accomplishing the creator's purpose, rather than the purpose itself. In terms of the relationship between human beings and human beings, the relationship between human beings and artificial intelligence only exists between human beings and objects but not between human beings and human beings.

3.1.2 Artificial intelligence does not have self-awareness

At the cognitive level, human rationality is reflected in the fact that human beings are able to recognize the world through consciousness and thus legislate for nature. The process by which human beings come to know the world is the process by which internal reason unifies external perceptual images. During this process, knowledge is formed dynamically through the use of unique thinking ability of human beings. [3] This unique thinking ability belongs to human consciousness and originates from human reason. It is precisely because of this thinking ability that human beings have become the subjects of cognitive activity. However, all things in the world have become the objects of cognition because they do not have consciousness. Therefore, human beings have the ability to legislate for nature.

However, in terms of the stage of development of artificial intelligence, John R. Searle, an American philosopher, explored whether artificial intelligence should have cognitive abilities in a psychological and philosophical sense. He divided artificial intelligence into weak artificial intelligence and strong artificial intelligence, thinking that the former is only a tool to assist research, while the latter is an intelligent product that can be equivalent to human mind after appropriate programming, with "human-like" autonomous consciousness and rational thinking. [9] At present, we are still in the era of weak artificial intelligence. The current stage of artificial intelligence is still essentially an auxiliary tool used by human beings to complete the creation of works. The process of generating content by artificial intelligence is not equivalent to the thinking process of human beings. In addition, from the point of view of the source of knowledge, the knowledge base of artificial intelligence relies on human input. And its

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[5] The above legislative proposal of the European Union has triggered the discussion of the international community on whether artificial intelligence should be given the qualification of legal subject.

generation of content relies on the analysis of existing data, which is the product of being trained by researchers. Artificial intelligence can only recognize and understand things through algorithms predetermined for them by humans or through training on large amounts of data. Their cognitive abilities are highly restricted, with limitations in their ability to understand abstract concepts and unstructured information. For example, while artificial intelligence can recognize words and sentences in text, it cannot truly understand the emotional expressions or deeper meanings of them. Therefore, artificial intelligence does not possess the unique thinking ability of human beings, and thus does not produce self-awareness, does not possess rationality, and is essentially an object of human cognition.

3.1.3 Artificial intelligence does not have freedom

Because artificial intelligence does not have self-awareness, it can be assumed that it does not have the freedom to make choices based on free will. At the practical level, human rationality is reflected in the fact that human beings are free and able to transform the world in a dynamic way, thus legislating for themselves. Human free will manifests itself in illogical choices, where individual perceptions and desires lead to different decisions. Human beings are able to detach themselves from immediate sensations and desires, transcend the impulses of the senses and restrain themselves, and think and act with a broader perspective, pursuing what is more beneficial to the overall interest, rather than being confined to the immediate interests and desires of the present. Thus, human beings are able to legislate for themselves and limit their behavior. Law requires the interaction of sentiment and jurisprudence, and this desire and choice of human beings influences the choice of the guiding ideology of jurisprudence, the design of the legal system, and the practical application of and compliance with legal norms. It can be said that human freedom is crucial to the development of law.

However, the judgment of artificial intelligence is the result of logical calculations. It strictly adheres to the built-in procedural settings, and will only use pure utilitarian logic to make judgments. It will not be able to weigh the advantages and disadvantages in complex situations. It cannot reason, cannot express meaning, and thus cannot perform legal acts. So it is meaningless to give it the status of a natural person as a legal subject.

In short, in the Kantian philosophical perspective, only human beings can become “natural persons”. Artificial intelligence as a human creation can only be the object of cognition. The status of the subject and object cannot be exchanged. It can be seen that artificial intelligence does not have the philosophical basis to become the subject of law.

3.2 Artificial intelligence cannot be fabricated as a legal subject from the perspective of private law theory

Based on the purpose of their own development, human beings can give the necessary things the subject status, so as to better show the properties of the means of things, reflecting the value of human beings. Because of the human economic and social development needs, human beings endow legal persons with legal subject qualification. Therefore, some scholars propose that artificial intelligence can be given legal subject status according to this legal drafting techniques. This paper believes that the above view is a matter of debate. The reason why the legal person is fabricated as a legal subject is based on the ancient Roman people and personality separation legislation technology, the legal person itself and its beneficial. On the contrary, in terms of artificial intelligence, although there is now legislative technology, whether it has substantive and beneficial conditions is worth exploring.

3.2.1 Artificial intelligence has no substantive basis for being anthropomorphized as a legal subject

From the point of view of the legal subject itself, according to the current legal provisions, in order to be a legal subject, there are two requirements, one is that the subject of law should have "autonomy" and "self-discipline". This means that the legal subject is able to decide on its own actions and comply with the law and ethical norms on its own; secondly, the legal subject is able to independently enjoy its rights, obligations and responsibilities in accordance with the law. According to these requirements, the formulation of a legal person as a legal subject meets the requirements, but artificial intelligence does not meet the above criteria and cannot be formulated as a subject of law.

First of all, the legal person is a collection of people and property. The legal person is the organization, and is essentially a collection of natural persons. The will of the legal person is embodied in the will of the group of natural persons behind it. The implementation of the legal person's behavior, rights, obligations, and liability can not be separated from the natural persons. Therefore, the legal person can embody the rationality of natural persons, with the characteristics of autonomy and self-discipline. However, artificial intelligence is a collection of algorithms and programs, which is an intellectual achievement of human beings. It exists independently of natural persons after its design is completed. Not only does it not have its own rationality, but also fails to reflect the rationality of natural persons.

Secondly, as independent legal entities, legal persons have their own property and enjoy the right to corporate property. This means that legal persons can use their property to assume legal liability and pay debts. However, artificial intelligence is a human creation that does not have property, and it is unable to use its property to assume legal liability. Even if the relevant property
management system and liability assumption system for artificial intelligence are formulated, the ultimate property manager and liability fulfiller will be a natural person.

3.2.2 Beneficial conditions for artificial intelligence not to be proposed as a subject of law

From an economic and social point of view, firstly, the proposed establishment of legal persons as subjects can promote the development of legal persons themselves. Specifically, the provision of limited liability of legal person reduces the investment risk of investors, stimulates their investment willingness, and then promotes the emergence of more legal persons, which can form a virtuous circle. Secondly, the legal person emerges due to the development of commodity economy. This legal fiction is conducive to the development of commodity economy and brings economic benefits. Specifically, in order to incentivize investment and protect the interests of investors, a large number of legal persons emerge, which promotes the development of commodity economy. Making the legal person as the legal subject can avoid the complexity caused by the majority of its individual members as the subject of the legal relationship, and improve the efficiency of civil and commercial activities. The establishment of the subject qualification of legal persons has brought significant convenience to the development of civil and commercial activities.

However, granting artificial intelligence the status of a legal subject by legal fiction does not bring economic benefits. First of all, artificial intelligence itself is an intellectual achievement of mankind. Its own can get the protection of intellectual property law and its designers can be inspired by intellectual property law so as to create more and more high-quality artificial intelligence products. Giving artificial intelligence the proposed legal subject qualification can not motivate designers to create. Secondly, artificial intelligence is a product of the development of science and technology, and its emergence greatly improves the productivity of human beings. In other words, the purpose of artificial intelligence is to assist human labor, not to be participated in civil and commercial activities. Being proposed as a legal subject can not make it personally participate in civil and commercial activities, either can not bring vitality to the economic market.

In summary, artificial intelligence has no substantive basis and beneficial conditions to be proposed as a legal subject.

4 Artificial intelligence generated content is copyrightable

The issue of whether artificial intelligence generated content (hereinafter referred to as AIGC) is copyrightable is currently controversial in the academic community. There are mainly three different views: the first viewpoint takes a negative attitude towards the above issue, believing that AIGC has so far been generated by algorithms, programs and templates, which cannot show the unique personality of the creator. Therefore, it does not conform to the definition of creation under the copyright law, and should not be granted copyright protection. The second viewpoint takes a positive attitude and thinks that the above issue can be judged by applying the originality standard. The third viewpoint holds a neutral attitude towards this, arguing that the content generated by artificial intelligence neither originates from human beings nor requires human beings to pre-set the rules. Although it is difficult to interpret this kind of generated content as a work in the sense of the current copyright law, with the continuous development of the industry, when artificial intelligence can create independently from human beings, then it is necessary to revise the current system and take AIGC as the object of copyright regulation. This paper argues that AIGC is copyrightable for the following reasons.

4.1 Copyrightability of AIGC is consistent with the legislative intention of copyright law

The purpose of the copyright law is to safeguard the legitimate rights and interests of copyright holders, to ensure that copyright holders are able to enjoy personal and property rights and interests in the works they create, and to encourage people to participate in creative activities through the protection and incentive mechanism for creativity. At the same time, the copyright law encourages the creation and dissemination of works that are beneficial to the construction of socialist spiritual and material civilization, conveys socialist core values and promotes social progress and civilization, as well as the prosperity of socialist culture and science. It can be seen that the Copyright Law encourages creation as a means to achieve the objective of the prosperity of socialist culture and science.

In terms of the collection of existing works, nowadays, with the support of powerful data and algorithms, artificial intelligence has an extremely large amount of information reserves, which can accurately copy and disseminate information resources at a low cost, assisting people in efficiently obtaining existing information resources for the creation of works, shortening the time for human beings to create the same or similar works, and improving the efficiency of human creativity. It helps human beings to save more time and energy for the innovations in ideas, styles, and other aspects, making it possible for people to create more works of different styles and types, satisfy people's diverse spiritual and cultural needs, and prosper the socialist cultural and scientific undertakings. In this sense, artificial intelligence works can liberate human beings from low-value repetitive labor, give more creative freedom to ordinary users, and help human beings develop more difficult and more valuable fields.

At the level of work creation, AIGC exists objectively, and it is valuable to the subsequent creation of human beings, providing new ideas and revelations for human...

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1. See section 1 of the Copyright Act.
beings, thus stimulating human beings’ unlimited creativity and imagination, and broadening people's ways of thinking and horizons. If we do not recognize the copyrightability of the valuable intellectual achievements of artificial intelligence just because of its "inhumanity", it will lead to the fact that some high-quality intellectual achievements cannot be protected, which is not conducive to the researchers and developers to continue to optimize the algorithms and improve the performance of the artificial intelligence in order to generate more valuable intellectual achievements. It is not advantageous to stimulating innovation and the prosperity of cultural endeavors. Therefore, the determination that the content generated by is copyrightable is in line with the legislative intent of the Copyright Law.

4.2 AIGC can satisfy the elements of a work

According to article 3 of the Copyright Law, it can be seen that there are four elements of a work: first, it must be an intellectual achievement in the fields of literature, art or science; second, it must be an expression of an idea rather than an idea in itself; third, it must be capable of being expressed in a certain form; and fourth, it must be original. Of these, the first three are easier to judge, and originality is the key to determining whether an intellectual product constitutes a work.

Theoretically, the term "originality" has two meanings. One is uniqueness and the other is creativity. One the one hand, uniqueness refers to independent creation by the creator, with the intellectual achievements originating from the creator himself rather than others. One the other hand, creativity refers to the fact that the work must achieve a certain degree of creativity. The originality standard can be divided into subjective and objective standards, with the former requiring that the work be closely connected with a natural person, i.e., insisting on "independent creation" as a necessary element for the composition of the work; and the latter emphasizing the differences among works, i.e., insisting on "originality" in the object of the work. Independent creation essentially embodies the relationship between the work and the author. It emphasizes that the author obtains the right to the work through the act of independent creation, the significance of which lies in determining the attribution of the right to the work and the source of the copyright holder's right to the work. It does not prove that the creation is a work. In other words, taking the relationship between the work and the author as an element of the work is not in line with the basic logic of the law, and such a move may lead to confusion between the connotation of the work and the attribution of the work. Therefore, it is more appropriate to adopt the objective criterion of originality. In addition, the criterion of originality comes from social evaluation other than that of the author. The identity of the creator should not be a constitutive condition for the protection of a work. Whether AIGC can be a work, we should consider whether such generated content is "substantially similar" to the work created by others, and whether it can be recognized by the "general public" based on human readers.

In practice, it has been difficult to distinguish between AIGC and human-created intellectual achievements with originality in form. It means that under the premise of adopting the objective standard of originality, if there are differences in expression between AIGC and works created by human, and if they have gained public acceptance, the generated content has the possibility of being recognized as a work. Currently, courts have recognized that AIGC is a work. For example, in the case of Tencent v. PCCW, PCCW Technology published an article written by Tencent's artificial intelligence Dreamwriter on its website without Tencent's permission. The court held that the article was created by the creator according to his personal choice and arrangement, and that its external manifestation as well as the generation process satisfied the conditions for written works under the Copyright Law. Thus it can be concluded that the article in question was a written work protected under the Copyright Law.

In summary, AIGC helps humans gather information, gives them inspiration, and improves the efficiency of human creativity. It can be copyrightable when it meets the standard of originality.

5 Attribution of Copyright in Content Generated by Artificial Intelligence

If AIGC meets the originality standard, it can be a work, so it is worth exploring the issue of its copyright attribution. Currently, the attribution of AIGC mainly involves the public domain, designer, owner, user, collaborative work, orphaned work, and other points of view.

5.1 Discussion of current attribution patterns

5.1.1 Public domain theory

The value of copyright law lies in balancing the interests of copyright owners with the public interest of society. On the one hand, it grants the copyright a certain period of protection, so that the copyright owner can gain income through monopolistic utilization of the copyright within this period, and then motivate people to create more works. On the other hand, it strictly restricts the period of protection, so that the works enter into the public domain for the free use of the whole society after the expiration of the period, in order to maintain the sufficiency of intellectual achievements in the public domain, and to ensure the continuous enhancement of the overall innovation ability of human beings. There are only two cases in which a work enters the public domain: one, when the copyright exceeds the term of protection; and the other, when the copyright is not owned by the owner. According to the public domain theory, the
inclusion of AIGC in the public domain not only helps to solve the problem of copyright ownership, but also balances the interests of copyright holders and the public interest, reduces the cost of innovation, and incentivizes innovation.

This paper argues that placing AIGC in the public domain may lead to an imbalance of interests. First of all, AIGC is not a thing without a copyright owner. Its designers, owners, and users may obtain the copyright of such generated content under certain conditions. They need to provide paid labor for the generation of AIGC. Putting AIGC in the public domain will make their labor cost equal to benefits, which is not conducive to motivating their investment in artificial intelligence. Besides, AIGC objectively exists, which contains great innovative value. If the AIGC is recognized as a work, and then placed in the public domain, all the people of the AIGC have the right to use, without restrictions on their use behavior, resulting in the depletion of the public domain of the innovative resources and waste, as well as the endless pursuit of personal interests, which is at the expense of the public interest, finally leading to a "tragedy of the commons".

5.1.2 The designer theory

Some scholars argue that copyright in AIGC rests with the designer of the artificial intelligence based on the following three main arguments, all of which have certain shortcomings.

First, AIGC benefits from the intellectual labor of artificial intelligence designers. The algorithm setting, creation training, and code modification of artificial intelligence rely on the creative labor of its designers. However, the artificial intelligence product is the intellectual achievement of the designer, who enjoys intellectual property rights over the achievement and has the right to control whether the artificial intelligence product is marketed as well as the revenue. Importantly, the research results have already been property rightsized, and the existing intellectual property rights protection mechanism is sufficient to provide incentives for them. So the designer does not need to claim copyright over AIGC.

Moreover, the designer may choose not to publicize the artificial intelligence. For example, Pamela Samuelson argues that if copyright in the content generated by the artificial intelligence is not available, it is possible for the designer to protect the artificial intelligence he or she has developed as a technological secret, sign his or her name to the AIGC, and copyright the content in his or her own name, thus de facto enjoying copyright in the AIGC. However, it is significant to regulate the signature of AIGC, and it is not reasonable for a designer to obtain copyright on AIGC in his or her own name. False or fraudulent attribution of AIGC will not only be detrimental to the social evaluation mechanism associated with attribution rights, but will also magnify the public safety risk of artificial intelligence-generated disinformation, leading to a serious social crisis of trust. Compared with human beings, artificial intelligence generates information more efficiently, and the form of its generated content is indistinguishable from human-created content. The probability of artificial intelligence generating false information and confusing humans is extremely high. The proliferation of false information, which is difficult for people to distinguish, will make them skeptical of any information, resulting in a serious crisis of confidence.

Once the information is signed by a human as the author, and in the form of the signature is the same as the correct information, such information is not easy to be recognized or detected by the public, but on the contrary, it is signed by an artificial intelligence, people will have reservations about the authenticity of the content it generates. Currently, Amazon, Anthropic, Google, Inflection, Meta, Microsoft, and OpenAI have committed to the Biden Administration to make a series of voluntary commitments to protect users, including agreeing to security testing and adopting a new watermarking system to ensure that users are able to distinguish AIGC, thereby reducing the risk of fraud and misinformation.

Furthermore, AIGC can be considered as a derivative work. As an example: some researchers have argued that AIGC can be considered a product of artificial intelligence software and can be viewed as an extension or deduction of the original software work created by the designer. In the event that it is not possible to take the artificial intelligence as the right holder, the designer can be regarded as the initial creator of the content, owns the copyright of the content, and can extend the copyright of the derivative work generated by the artificial intelligence. However, copyright law protects expression that is original, and AIGC is not inherently a derivative work of an artificial intelligence program. Derivative work is a work based on another work. Although the deducer adds original expressions in the process of creation, these expressions are not sufficient to make the derivative work completely independent of the original work. In other words, the creation of a derivative work continues the basic elements of the original work. The designer has a copyright in the software required for the artificial intelligence to function, but the AIGC is not merely a translation of the designer's code. The core expression of an artificial intelligence program is its code, while the original expression of its content is its combination of words, art, music, etc. The latter is not a modification of the former. Due to the inherent specialization and complexity of artificial intelligence technology, as well as the exclusionary business policies adopted by technology companies out of the need to pursue profits, it is difficult for people to distinguish the original algorithms and code from the generated content of an artificial intelligence, and it is impossible to recognize an artificial intelligence program from its generated content to recognize the original expression of the artificial intelligence program.

Therefore, AIGC does not conform to the logic of a derivative work.

In summary, the artificial intelligence designer is not entitled to copyright in the generated content when the user inputs instructions to the artificial intelligence and makes the necessary arrangements for the eventual generation of the AIGC.

5.1.3 Owners and users theory

The owner argument applies by analogy to the corporate works requirement, arguing that AIGC represents the will of the owner, therefore such generated content, once it meets the criteria of a work, is copyrightable. The copyright should be vested in the owner of the artificial intelligence. The user argument argues that the user of artificial intelligence should enjoy the copyright of AIGC based on usage agreement, the tool attributes of artificial intelligence, the user's input of information, and the legislative purpose of the Copyright Law. Some scholars also regard AIGC as commissioned works. The process of creation by users of generative artificial intelligence actually involves a contractual relationship between the user and the artificial intelligence developer. In this case, the artificial intelligence developer hires a technical team to run the artificial intelligence program to create the work according to the user's requirements, and the user pays the developer in exchange for the contractual agreement. The user is the "customizer" who provides specific requirements and instructions and expects the artificial intelligence to generate content to meet his or her creative needs, while the developer is the "contractor" who is responsible for running the artificial intelligence program and delivering the generated work to the user. Based on the contract, the user acquires the copyright of the AIGC by agreement with the artificial intelligence developer. The above views have some desirability. All of them affirm the instrumental attribute of artificial intelligence, and the idea of analogical application also has some value. However, the identity change of the artificial intelligence owner and the user based on the employment contract and entrustment contract relationship has been ignored, and the above viewpoints have a certain one-sidedness.

In addition, there are scholars who apply the provision of service works by analogy, arguing that the user or owner of the artificial intelligence is entitled to copyright. On the one hand, the artificial intelligence achieves the result desired by the user and thus it enjoys the right of attribution. This allows AIGC to be distinguished from human-created content, and the artificial intelligence's creative contribution to it is noted. On the other hand, the fact that the user enjoys a copyright on the AIGC in addition to the right of attribution helps to stimulate creativity in human subjects, and enables the innovation stimulating effect of copyright law to be realized. This paper argues that such a view is debatable. First of all, as mentioned above, the subject qualification is the qualification of a person with certain conditions to enjoy the rights and assume the responsibilities and obligations. The right of authorship is the personal right to indicate the author's identity and sign his name on the work. Artificial intelligence does not have the qualification of legal subject, and thus cannot enjoy the rights stipulated in the law. Therefore, granting it the right of authorship does not have the legal basis. Besides, due to the lack of rationality, even if the artificial intelligence is given the right of authorship, it cannot fully exercise it. For example: the artificial intelligence can not independently decide whether to sign its name on the content it generates, can not decide the way of signing, can not prohibit others from signing their own works, and can not exercise the right of authorship to require others to sign their names when they use their works. Its right of authorship is ultimately exercised by the person who enjoys the right to dominate the proceeds of the AIGC.

5.1.4 Collaborative work theory

The collaborative work theory argues that there are two steps in the generation of content by artificial intelligence. First, the artificial intelligence designer creates the artificial intelligence product. And then, the artificial intelligence user generates the content using a pre-existing program. They work together to make the artificial intelligence creation, thus recognizing it as a collaborative work.

However, this paper argues that a cooperative work refers to a work jointly created by two or more authors. Collaborative works need to satisfy the following elements at the same time. Firstly, there should be an agreement to co-create between the co-authors. Secondly, in the process of creation, the co-authors always carry out the intention of cooperation and consciously adjust their respective creative styles so that the works are articulated and harmonized with each other. Furthermore, the creators should intend to share the copyright as co-authors. Finally, the collaborative works should reach the standard of originality as stipulated in the copyright law. Specifically with regard to AIGC, first, there is no co-authorship agreement between the artificial intelligence designer and the user. What the designer designs is only the program of the artificial intelligence, which does not include the design of the generated content. And even if the user inputs the same command, the content generated by the artificial intelligence based on the built-in program may not be the same. Second, the designer has no control over the content generated by the user according to the program, and cannot consciously adjust the style of the content generated by the artificial intelligence to make the final cooperation results harmonious and unified as a whole. The AIGC ultimately depends on the user's choices and selections when inputting instructions. Again, the designer does not have the subjective intent to share the copyright of the AIGC with the co-authors. In other words, it is the designer's job to design the artificial intelligence product in accordance with the requirements, and the incentives he or she can be subjected to have already been enjoyed at the time of the completion of the product design. Finally, after the designer has built in the artificial intelligence...
program, he or she cannot control or decide whether the generated content meets the originality standard. And not all AIGC meets the originality standard. In summary, it is not reasonable to recognize AIGC as a collaborative work.

5.1.5 Orphan's work theory

Orphan works are works whose copyright holders cannot be contacted through best efforts to find them. \(^{[27]}\) Copyright, other than the right of authorship, is exercised by the owner of the original work. After the identity of the author is determined, the copyright is exercised by the author or his heirs. \(^{[28]}\) Some scholars believe that treating AIGC as orphan works can effectively solve the problem of the lack of AIGC rights subjects. This is conducive to balancing the interests of artificial intelligence investors and users of generated content, improving the efficiency and value of the utilization of AIGC, and encouraging the owners of generated content to claim their rights. \(^{[29]}\) The main goal of the orphan works system is to promote the dissemination and utilization of works, while taking into account the interests of copyright holders.

With regard to the issue of AIGC, firstly, in the process of dissemination and use of AIGC, it is difficult to define the "original owner"; and ultimately it is still necessary to determine the attribution of rights to the designer, owner and user of the artificial intelligence. Secondly, even if the protection model of orphan works is utilized for its protection, it is not a long-term solution. AIGC is in fact not an orphan work, the generation of such content as an orphan work is only a temporary protection measure to avoid that when it can be a work, it is difficult to find the attribution of copyright rights and difficult to be protected by the copyright law, and then fall into a chaotic situation, which will jeopardize the development of the artificial intelligence industry, etc. In the end, it is still necessary to design the system of attribution of copyright for the generated content of artificial intelligence. \(^{[30]}\) Therefore, the use of the orphan work model for its protection is still somewhat insufficient.

5.2 Proposals for attribution models

Thus, it appears that all the above views are one-sided. To summarize, this paper holds that artificial intelligence is a tool to assist human creation, and in principle, users of artificial intelligence enjoy the copyright of AIGC, unless otherwise provided for in the copyright law or agreed upon by the parties. This is also in line with the mode of attribution of works under China's copyright law: the principle of belonging to the author, supplemented by special provisions, and excepted by contractual agreement. \(^{[32]}\)

5.2.1 The principle that copyright in AIGC belongs to the user

Specifically, our copyright law provides that the natural person who creates a work is the author. \(^{[33]}\) The so-called creation is an intellectual activity that directly produces a work. \(^{[34]}\) This also means that merely organizing others to create works, providing material and technical conditions, gathering information or providing ideas is not a creative act. The act of creation should be based on the criterion of whether or not substantial intellectual activity has been invested. If the user intervenes in the process of generating the content of the artificial intelligence by inputting commands, and the artificial intelligence carries out auxiliary work such as collecting information and providing ideas for human beings, but does not directly participate in the creation of the work, the user enjoys the copyright.

The reasons are as follows: first, artificial intelligence relies on users to generate content. Artificial intelligence cannot actively generate content, and it relies on the user's information input, content qualification, and generates intellectual results according to its algorithms, rules, templates, etc. It requires the user's input behavior to start its system. Users fixed AIGC, and it can be expressed in a certain form, to meet the elements of the work. Secondly, the user participates in AIGC training. The user uses the artificial intelligence for the purpose of completing the creation, and the artificial intelligence has the attribute of a tool to assist the creation. The input information reflects the user's choice and judgment. Finally, the user is responsible for the infringement of AIGC. The user has the ultimate power over the AIGC, can decide whether to use it and whether to benefit from it. He or she is the actual biggest beneficiary of the AIGC, who should bear the responsibility for copyright infringement. To summarize, at this point, it is possible to use legal drafting techniques to treat the user of the artificial intelligence as the author and therefore entitled to copyright.

5.2.2 Special provisions for copyright attribution of AIGC

The copyright of AIGC is attributed to special subjects if it belongs to special types of works. In China's current copyright legal system, special provisions mainly refer to corporate works, service works and commissioned works.

First of all, the Copyright Law stipulates that a legal person or an unincorporated organization is regarded as the author of a work that is created by a legal person or an unincorporated organization under the auspices of, on behalf of, and for which the legal person or unincorporated organization assumes responsibility. \(^{[35]}\) Therefore, for artificial intelligence like Dreamwriter which is used by a company, then the copyright of its generated content still belongs to the company.

\(^{[1]}\) See Article 13 of the Regulations for the Implementation of the Copyright Law

\(^{[2]}\) Section 11 of the Copyright Act.

\(^{[3]}\) Article 3 of the Regulations for the Implementation of the Copyright Law

\(^{[4]}\) Section 11 of the Copyright Act.
Secondly, if an employee creates a work using the legal person or unincorporated organization’s artificial intelligence in order to complete the working tasks, the user's creation at this time is a service work. The copyright of AIGC should be determined in accordance with Article 18 of the Copyright Law. The copyright of the general work belongs to the user, and the legal person or unincorporated organization enjoys a two-year priority right of use within the scope of business; the legal entity or unincorporated organization owns the copyright of the special work, and the user only enjoys the right of authorship.

Finally, if there is a commissioning relationship between the user and other subjects, on the basis of which the commissioned parties participate in the training of AIGC and utilize it to create the work, the AIGC is a commissioned work at this time, and the attribution of its copyright shall be determined in accordance with the following rules. The ownership of copyright shall be agreed upon a contract between the commissioning and the commissioned parties. In the absence of such a contract or of an explicit agreement in委托ing and the commissioned parties. In the absence of such a contract or of an explicit agreement in the contract, the copyright in such a work shall belong to the commissioned party. If the copyright of the commissioned work belongs to the commissioned party, the commissioning party shall have the right to use the work within the scope of the agreement. If the two parties have not agreed on the scope of use, the commissioning party may use the work free of charge within the scope of the specific purpose of the commissioned creation.①

### 5.2.3 Exceptions to the Agreement on Copyright Ownership of AIGC

Private law pursues the freedom and equality of human beings. Autonomy of Will is the embodiment of the concept of freedom and equality in private law and the basic principle of civil law. Copyright law is a special law of civil law, which should also follow the basic principle of civil law. The essence of Autonomy of Will emphasizes the autonomy of the individual and the importance of free will, which gives the subject of the right to freedom of action, and considers that the individual has the right to make choices, decisions and agreements independently. It means that the individual can participate in shaping the legal relationship with others based on his/her own will and interests, and embodies the respect and protection of human beings. Therefore, a contract can be concluded between the designer, user and owner of artificial intelligence based on free will, and a clear agreement can be made on the specific matters of copyright attribution of AIGC. At this time, when there is an agreement between the parties, the agreement of the parties shall be applied in priority.

① Article 19 of the Copyright Act.
② Article 12 of the Interpretation of the Supreme People's Court on Several Issues Concerning the Application of Law to the Trial of Cases of Civil Disputes over Copyright.

### 6 Conclusion

The clarification of the legal subject status of artificial intelligence, the identification of works and attribution of rights of AIGC will contribute to the healthy development of the artificial intelligence industry as well as the growth of literary and scientific undertakings. Although artificial intelligence does not have the status of a legal subject at present, a large amount of its generated content is original and indistinguishable from human intellectual achievements in form. If it is not protected by copyright, it will be detrimental to incentivizing creativity and is not in line with the purpose of the legislation of the copyright law. Scholars have expressed their own views on the attribution of copyright. And it is necessary to further test the advantages and disadvantages of them in practice. The intellectual property law aims to balance interests. In order to better cope with the impact of artificial intelligence on copyright law, when it comes to the attribution of AIGC rights, we should take into account the interests of multiple parties and the logic of existing copyright law.

### References

12. Li Y., Li X. Y., Exploration of the copyright problem


