

On the Copyright Analysis of Artificial Intelligence Products

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Abstract: With the gradual maturity of artificial intelligence technology, artificial intelligence products continue to emerge in the market, which poses new challenges to the current copyright law system. In particular, whether artificial intelligence products are copyrightable is a hot and difficult issue in the current theoretical and practical circles. Based on this, there are two mainstream viewpoints in the current theoretical circle, that is, the viewpoint that supports copyright protection for artificial intelligence products from the perspective of "reader-centered", and the viewpoint that opposes copyright protection for artificial intelligence products from the perspective of "author-centered". However, the question of whether artificial intelligence products can be protected by copyright involves verifying the reasonableness and forward-looking nature of the "open" regulation of copyright objects in China on one hand. On the other hand, it is also relates to determining the future legislative direction of high-level artificial intelligence. Therefore, by comparing the similarities and differences in originality between the copyright law system and the copyright law system, the conclusion is drawn that artificial intelligence products should be protected by copyright. The evaluation criteria of subject-object separation established by "reader-centered doctrine" should be adopted.

Keywords: The artificial intelligence products, Copyability, Originality, Intellectual output

1. Introduction

On 13 April 2023, the SONY World Photography Awards (SWPA) were presented in London. One winner, Boris Eldasen from Germany, declined to accept the award because his winning work was created by the AI image generator DALL-E2 [1]. In early September 2022, Space Opera, a painting that won the first prize in the digital category at the Fair's art competition in Colorado, USA, caused a lot of controversy and criticism because it was generated by artificial intelligence [2]. The influence of artificial intelligence products has spread to the field of visual art, and the resulting copyright protection issues for artificial intelligence products have become an urgent concern for both theoretical and practical circles. However, in the current legal system, the achievements of copyright protection are only the achievements of human intelligence creation, so from the perspective of "author-centered", AI does not meet the requirements of the composition of the work from the main body. In its Guidelines on Copyright Registration of Artificial Intelligence Products issued by the US Copyright Office, it is stressed that the content automatically generated by AI programs is not protected by copyright law and cannot be registered because it lacks the identity of the human author. This shows the conflict between technology and the law. Based on the current

status of artificial intelligence technology development, this paper aims to summarize existing viewpoints in theoretical and practical circles, considering the protection practice of artificial intelligence products, and intends to study the significant copyright issues involved in artificial intelligence products.

2. Disputes over the Copyright of Artificial Intelligence Products

From a normative point of view, copyability must start from the property of the work. According to Article 3 of the Copyright Law, what constitutes a work is "in the fields of literature, art and science", "originality", "expression in a certain form" and "intellectual achievement". There is no dispute in the academic circles about what constitutes a work "in the fields of literature, art and science" and "in a certain form of expression". At present, the focus of controversy is mainly on "originality" and "intellectual achievement".

At present, there are two mainstream viewpoints in the theoretical circle on whether artificial intelligence products have the property of works: supporting and denying. Scholars who hold the supporting view believe that its external expression form can be included in the scope of protection of works as long as it meets the minimum requirement of originality [3]. From the perspective of the creative process, some scholars believe that the products of artificial intelligence have the ideological expression form and personality elements of the work, and should be protected by copyright [4]. The above views indicate that the standard of copyrightability of the content generated by artificial intelligence should shift from the author's perspective to the result itself. As long as the artificial intelligence product meets the minimum creativity in objective expression, it constitutes a work. On the basis of "minimum creativity", it is necessary to put forward the requirement of "independent completion" of the artificial intelligence generated work [5].

However, scholars who hold the negative view discuss it from different latitudes. Some scholars argue from the perspective of the creation subject that the creation of natural persons is the premise and basis for the establishment of works, and artificial intelligence is not a natural person, so artificial intelligence products cannot be identified as works [6]. From the perspective of the production process of artificial intelligence products, some scholars believe that the content generated by artificial intelligence is executed by the computer according to certain algorithms and programs. Ultimately, it is created based on algorithm set by human beings, leading to a high degree of homogeneity that may not reflect the unique personality of the author. therefore, it is considered not-original [7]. Some scholars doubt that artificial intelligence products lack real emotional experience as works [8]. In summary, the negative view emphasizes that works should reflect thoughts and emotions. It asserts that the creator of the work must be a natural person, and there are specific requirements regarding the depth and breadth of emotions.

It is worth noting that some scholars argue that whether an artificial intelligence creation is a work is a matter of policy choice. They suggest that the pros and cons of the possible consequences resulting from this type of creation should be analyzed after its enter into the market. Furthermore, different countries should make choices according to their national conditions [9]. However, some scholars maintain that in the context of economic integration, industrial development depends on the global protection of intellectual property rights, and the impact of globalization on industrial development should be taken into account when discussing whether to legislate separately for artificial intelligence [10]. As far as this paper is concerned, from a theoretical point of view, a single legislation of a country may lead to the situation that the protection standards of that country are not compatible with those of other countries, which may lead to the influence of the artificial intelligence industry in its own country. Therefore, countries should consider the context of globalization when revising the copyright of artificial intelligence products. However, unfortunately, the current trend of law revision in most countries is still to consider only the national position.

3. Identification of the Intellectual Achievements of Artificial Intelligence Products

At present, the theoretical circle has different expressions of the "intellectual achievements" related to the content of artificial intelligence and copyright, and the more common names are "artificial intelligence products", "artificial intelligence generated content", "artificial intelligence creations" and "artificial intelligence created works" [11]. This paper holds that the reason for avoiding the expression of "intellectual achievements" may be that some scholars believe that "intelligence" in copyright law is exclusive to the "intelligence" of natural persons. Therefore, "intellectual achievements" must also be attributed to the result of "human" intellectual labor. However, the goal of artificial intelligence is to achieve brain-like intelligence technology, aiming to enable computers to function like humans and ultimately attain strong artificial intelligence. Therefore, from a "reader-centric" perspective, artificial intelligence products should be recognized as intellectual products within the meaning of copyright law.

First, from the perspective of the creative process, generative AI shows the characteristics of "intelligence" to some extent. That is, through data collection and pre-processing, it is trained based on deep learning models (such as recurrent neural networks (RNN), short term memory networks (LSTM) or Transformers). Once the generative AI model is trained, it can receive user input text and generate corresponding responses. In addition, generative AI can also continuously improve the effect of generative AI through model optimization and iteration [12]. It can be seen that its "creation" process realizes the imitation and substitution of human intellectual activities and restores the entire human thinking system. In this sense, the knowledge products generated by artificial intelligence also have "intelligence" components similar to human intelligence results. As some scholars have said, "the creative process of generative artificial intelligence is actually very similar to the creative process of human brain, or it is simulating the way of thinking of human brain... Namely, learning, conceiving and expressing. So, artificial intelligence products have similar originality in appearance to the works of natural people [13]." Similarly, as predicted by scholars, the era of strong artificial intelligence will arrive in the next 20 to 30 years [14], in which machines have human-level artificial intelligence systems that can not only complete specific tasks like current AI systems, but also have comprehensive abilities like humans, such as reasoning, learning, understanding language, and understanding emotions. In short, it is not simply copying and reproducing, but constantly reflecting the "intellectual" side of human beings.

Secondly, from the perspective of external expression, artificial intelligence products have no substantial difference from the intellectual achievements created by human beings. They are expressions of thoughts, emotions and cognition that can be understood by human beings [15]. Alan Turing proposed that if it is impossible to distinguish between a computer and a human being, then the computer can be considered intelligent [16]. Other scholars have pointed out that the words and sentences of artificial intelligence products produced based on users prompts are relatively smooth, demonstrating a certain level of coherence in their writing. It is merely a simple stacking or patchwork of words, and there is no substantial difference when compared to works created by humans. In this case, if it is proved that the product is not substantially similar to the published works of others, demonstrates high novelty and creativity through checks and other methods, then the product meets the requirements of the Copyright Law for originality of works, at least in form [17].

In summary, in the form of expression, artificial intelligence products can not only convey to the audience the thoughts and feelings contained behind the words and pictures, but also meet the requirements of copyright Law. "Expression" has characteristics that are different from existing works. In the creative process, it also includes personalized judgment and choice, which reflects the

"intelligence" of creation to a certain extent. Therefore, the "intelligence achievement" of artificial intelligence products is not difficult to prove.

4. The Original Judgment of Artificial Intelligence Products

Since it is not difficult to prove the intellectual achievements of artificial intelligence products, the judgment of their "originality" is the most controversial issue in the theoretical and practical circles. Based on this, this paper probes into the criteria for determining the "originality" of artificial intelligence products from the perspective of two legal systems.

4.1. Originality under the Two Copyright Law Systems

Copyright system countries adopt a very low standard for originality, the most representative of which are the United Kingdom and the United States. British courts have interpreted originality in a number of cases. In the *University of London Press* case, for example, the judges held that copyright law does not require originality in ideas, but rather originality in the way ideas are expressed [18]. Nor does copyright law require that the expression be original or unique, but it cannot be a copy or copy of another work. Similarly, in *Ladbroke (Football) Ltd.*, originality was defined as the fact that the work must have originated from the author and not be a copy of another work, and requires an input of "work, skill or money" [19]. It can be seen that the recognition of "originality" in British judicial practice is based on two basic principles: first, the work is not a copy of others' work. Second, the work must involve personal skill, labor or judgment.

The Copyright Act of 1909 in the United States requires originality in works, but does not give a specific explanation of originality. In judicial practice, the court defined originality for the first time in the *Bleistein* case in 1903, as long as a work is independently completed by the author, it has originality [20]. Before the *Feist* case, the court had always adopted the "brow sweat standard", that is, the amount of labor put into a work as a criterion to judge originality [21]. In the *Feist* case, however, the court abandoned the *sweaty forehead* theory and proposed a "minimum creativity standard," requiring "originality" to include both "independent creation" and "a small amount of creativity."

Countries with copyright system put forward higher requirements for "originality", which not only requires the works to be intellectual creations of the authors but also requires that the creativity must reach a certain height. The representative countries are France and Germany. In France, the traditional view is that "originality" is a reflection of the author's personality and comes from the author's creative choices in the creation process. In the landmark *Pachot* case, the judge defined "originality" as "intellectual input," but it would not be protected if the input was automatic or forced logical [22]. By taking "creativity" as the component of copyright law protection for a work, Germany believes that a work must have a certain level of creation beyond those ordinary things that anyone can produce before it can be considered "creative". In addition, a specific and objective "small coin standard" is also proposed for the minimum level of creation. This means that if the creation of a work reaches the thickness of a small coin, it can be considered as having met the requirement of being "creative". When it comes to the judgment of "creativity", on the one hand, the creation of the work must contain a certain depth. The work must be able to show the author's unique intellectual judgment and choice, and reflect the author's personality characteristics, so that they distinguish themselves from other works, not just a simple description of facts or news reports [23]. On the other hand, German scholars interpret "certain creativity" as "a work should have a certain height of creation, which is the lower limit of copyright protection." [24] "Creativity" requires that the work must have a certain height of creation, which is the lower limit of copyright protection. This is reflected in the fact that copyright protection is generally not granted to the daily,

ordinary and routine things. Based on Germany's judgment of "creativity", it is not difficult to find that the country's requirements for the identification of works are very strict, and the standard for evaluating the "creativity" of works is also very high.

To sum up, the understanding and discussion of "originality" in the two legal systems mainly focus on the meanings of the two concepts of "independent creation" and "creativity", and the main difference lies in the level of requirements for "creativity". China's requirement for originality of works is stricter than that of Anglo-American law system countries, but lower than that of traditional civil law system countries, which is in the middle of the two.

4.2. Theoretical Disputes and Judicial Practice on the Criterion of "Originality" in China

Although Article 2 of the Regulations for the Implementation of the Copyright Law stipulates originality, it has not been further explained. The definition of "originality" is only found in article 15 of the Supreme People's Court's Interpretation of Several Issues concerning the Application of Law in the Trial of Civil Disputes over Copyright Cases, where works created by different authors on the same subject matter are independently completed and creative in their expression, the authors shall be deemed to enjoy independent copyright. As a result, there are great disputes in the theoretical circle about the identification method and judgment criteria of "creativity". For example, some scholars believe that the content of a work is created by the author himself, and is not at all or basically copied from another work [25]. Some scholars believe that the creation of a work is the result of the author's own choice, selection, arrangement and design, and is neither a copy of the existing work, nor is it deduced according to a certain order and formula [26]. Other scholars believe that some intellectual labor put into the creation of the work is not created by copying the existing work. After mastering certain materials, the author uses his own creative skills and integrates his own thoughts into his works through careful arrangements. The external expression reflects his unique style in his works, which is not a simple intellectual input and labor effort [27]. It can be seen that although the current judgment standards of our theoretical circles are different, the focus of attention is mainly on the author's own behavior.

Similarly, the judicial organs also hold similar standards. For example, in the dispute over Li and Liu's infringement of the right of authorization and the right of information network dissemination, the court held that from the process of generating the pictures involved, the plaintiff designed the picture elements such as the characters and their presentation mode through prompt words, and set the picture layout and composition through parameters, which reflected the choice and arrangement of the plaintiff [28]. On the other hand, the plaintiff obtained the first picture by inputting prompt words and setting relevant parameters, continued to add prompt words, modify parameters, and constantly adjust and amend, and finally obtained the picture involved. This adjustment and amendment process reflects the plaintiff's aesthetic choice and personality judgment. In the absence of evidence to the contrary, it can be concluded that the picture involved in the case was independently completed by the plaintiff, reflecting the plaintiff's personalized expression, so the picture involved in the case has the "originality" element. In a word, as President Chen Jinchuan said, the judicial practice of our country should not put forward high requirements for originality, because "high" itself is a difficult standard to grasp. As long as there is a certain degree of individuality and creativity, and the work reflects the author's choice, choice, arrangement and design to a certain extent, it should be considered to have originality [29].

4.3. Artificial Intelligence Products Meet the Requirements of Originality in Copyright Law

As mentioned above, in order for an AI product to meet the originality requirements, it is necessary to give play to the unique personality of the author in the process of conception, design and

completion of the work, and the process should have enough space for intellectual creation, rather than quantitative results directed by mechanical labor. Therefore, the two criteria of "independent creation" and "minimal creativity" should be met.

First of all, as far as "independent creation" is concerned, with the development of technology, the role of artificial intelligence is no longer just a tool, but further developed into a partner of human creators. In the process of interaction between creators and artificial intelligence to jointly complete the creation of artistic works, the creative decisions of artificial intelligence, such as color selection, shape structure, will affect the final artistic results, making it an indispensable part of the artistic creation process. After the human subject provides it with the basic creative source, artificial intelligence can spontaneously learn and analyze the available part of the data information without any other help from the human subject, and select and combine it through its own wisdom, thus creating artificial intelligence products. This process reflects the intelligence and personality of the artificial intelligence itself, and the artificial intelligence product is the result of its "independent" creation [30].

Secondly, as far as "modicum of creativity" is concerned, first, it should not be identical with previous works and should have a certain degree of recognition; Second, it cannot be mechanical quantitative labor. Meeting the above two points can be considered to meet the minimum creativity, which is also applicable to artificial intelligence products. Artificial intelligence products created by artificial intelligence, as products based on massive data information as creative sources, contain artificial intelligence's own understanding of the type of creation works, not just simple repetition or direct copy of existing works. Taking Weiwei, developed by Tsinghua University in China, as an example, her poetry works independently created by learning a large number of ancient Chinese poems, the proportion of which could not distinguish whether it was created by artificial intelligence or humans reached 31%, exceeding the Turing test of 30% robot intelligence consideration criteria, that is, meeting the standard of having a certain degree of identification [31]. In particular, when relevant experts made specific evaluation and scoring of Weiwei's poems, one expert commented, "Although the syntax is not very stable, it is still a little emotional to think carefully." Some experts also believe that "although the expression of things is not new, the sentence smoothness has almost an acceptable level" [32]. It can be seen that artificial intelligence meets both the criteria of a certain degree of recognition and the criteria of quantitative labor that cannot be mechanical.

5. Conclusion

The Century of the Copyright of artificial intelligence products, proposed in 1965, aims to determine whether artificial intelligence products are created by humans or by artificial intelligence itself. For a long time in the past, from expert systems to the early interconnected systems, the development of artificial intelligence has been in the stage of acting as a creation tool. The camera has always been regarded as a kind of photographic work--no matter how complicated the internal structure of the camera and the imaging technology, the selection of the photographic material, the Angle and the lighting are all done by the human photographer--and therefore, the artificial intelligence products have always been treated as human works. However, after the development of artificial intelligence systems to artificial intelligence, such as ChatGPT, generative artificial intelligence can independently generate content that is no different from works created by humans in form, and has substantive control over the creation of works in the five links of "collection--training--context understanding--generation--optimization" of generated works. In contrast, humans have no substantial influence on the specific expression of the "work".

The centuries-old question of the copyability of artificial intelligence products, then, falls apart. Based on this, this paper holds that from the perspective of intellectual achievements, the expression

form of artificial intelligence products meets the requirements of copyright law and "expression" has the characteristics that are different from existing works. The creative process contains personalized judgment and choice, which reflects the "intelligence" of creation to a certain extent. Therefore, artificial intelligence products constitute intellectual achievements in the sense of copyright law. From the perspective of originality, artificial intelligence products meet both the conditions of "independent creation" and the requirements of "minimum originality", and therefore, can constitute a work in the sense of (Chinese) copyright law. It is worth noting that in the field of copyright law, in addition to the issue of copyright is the most important issue at present, the issue of copyright ownership is also the focus of discussion. However, the prerequisite for the ownership of the rights of artificial intelligence creations is whether they are copyrightable. Therefore, because of the length, this paper only focuses on the discussion of copyrightability.

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