

The Dilemma of the Intellectual Property System in the Context of Artificial Intelligence and the Path of Change

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Abstract: The rapid development of artificial intelligence technology has brought a series of challenges to the intellectual property system. In terms of the subject system, granting AI subject status will impact on the system centred on natural persons. In terms of the object system, AI creations are caught in the dilemma of identifying the objects of intellectual property protection and innovative standards. In terms of the content of rights, granting intellectual property protection to AI creations will face difficulties in the protection of personal rights, the duration of rights and the limitation of rights. In this regard, China's intellectual property system should be changed to expand the scope of the subject matter, improve the criteria for determining innovativeness, and improve the system for the content of rights, with a view to balancing the interests of all parties and promoting the development of artificial intelligence.

1. Introduction

Artificial intelligence first came to people's attention at the Dartmouth Summer Symposium in 1956. In just a few decades, AI technology has developed rapidly, penetrating all aspects of social life: voice recognition, face recognition, automatic translation, news creation, smart homes, driverlessness, and even legal services. AlphaGo beat the world's top-ranked Go player, Ke Jie, and IBM's Watson robot quickly diagnosed a disease that had eluded specialists for half a year. [1] Computer scientist Stephen Thaler has been able to make computers create aesthetically pleasing and creative works using neural network systems, and in China a collection of poems autonomously written by robots, *Sunlight Lost in the Glass Window*, has been published. In areas such as drug development, robotics and machine design, AI can also produce inventions that meet the requirements of existing patent grants, or produce products that qualify for existing patent grants. With the increasing intelligence of machines, AI creations do not seem to be different from human creations, so are AI creators? [2] Can the results they generate be the subject of intellectual property protection? The rapid development of artificial intelligence has touched on legal issues that never existed before, creating legal difficulties for the intellectual property system.

2. Dilemma of the Intellectual Property Subject System in the Context of Artificial Intelligence

2.1 The Dilemma of the Status of the Subject of Rights

In the late 1970s, the Committee on New Technology Utilization of Copyrighted Works (CONTU) of the U.S. Congress issued a final research report, which concluded that computer programs existed only as auxiliary tools and that works created by computers were no different from those done with other devices[3]. At the beginning of the development of AI technology, AI was more of a tool for human intellectual work, creating activities that were predetermined by humans, and the results were ultimately the result of human intellectual activity and could be placed under the existing IPR regime. But with the use of big data and neural network technology, AI can simulate the neurons in the human brain and perform deep learning, and it can automatically select the required materials from a massive database and process and integrate them. The contribution of AI's energetic role in creative activity can no longer be summed up by the word tool. In the field of news writing, AI systems can do it independently and come up with different versions for different audiences. It has been more than three years since DreamWriter, Tencent's writing robot, first published a press release, and today DreamWriter publishes more than 2,000 articles per day in its financial and technology applications, as well as hundreds of financial and sports press releases per day, covering daily market reports, concise coverage of listed company announcements, and news from every round and match of a sporting event. In the field of artistic creation, Google uses artificial intelligence systems to compose piano music, Baidu has developed new technology to see pictures and compose music, and Sony has created new music in the style of the Beatles and old Bach. Artificial intelligence is contributing an increasing proportion of creative work, while the human authorial element is diminishing, with the former even being able to carry out the entire process of creation on its own, creating works of art, music and literature that most people would agree are original. At this point, the products of knowledge are indeed created by AI, which on the surface seems to have become the subject of creative activity. It should then be clarified whether the AI can become the creator with rights to its creative output.

2.2 The Dilemma of Infringement Subject Status

Artificial intelligence has a powerful learning ability without the support of big data and neural network technology. Artificial intelligence learns from large amounts of information to improve its learning and analysis capabilities.[4] For example, by learning a large number of images from the web, artificial intelligence gradually becomes capable of correctly identifying the content of images. Machine learning does not avoid the collection and replication of sample data. In the process of recognising images, the object of machine learning is the huge amount of image material in the database, and in the process of learning to generate technical solutions, it is also inevitable that a large number of samples of technical solutions will be studied. As the learned material may be the object of intellectual property protection, there is a possibility of infringement of others' copyright on the grounds of copying without permission. For example, in order for an AI to generate a painting in the style of a particular master, it would be necessary to import all of that painter's paintings into the computer, and importing paintings into the computer could potentially constitute an act of copying and using another person's work. The process of machine learning is not only an act of scientific research; the ultimate goal of the programmer is to allow the AI to create new works through learning. [5]Therefore, the process of machine learning may infringe the copyright of others. In terms of the result of the creation, the AI creation may appear to be similar to an existing work, which would constitute an infringement under our existing “contact + substantial similarity” standard. This is also true in the patent field, where certain AI-generated technical solutions may infringe the patent rights

of others. However, China's existing intellectual property system does not treat AI as a subject of law, and AI cannot be a subject of infringement, nor can it commit legal infringement. As a result, AI may produce acts that infringe the rights of others, but it is able to escape liability for infringement. There is also no legal basis for holding AI developers or users liable for infringement. As machines already have the ability to learn and create on their own, creative activities are ultimately done independently of any direct human input and machine behaviour is outside their control. When an AI commits an infringement based on its own accumulated experience or knowledge, the developer or user is not liable for it. Thus, in the age of AI, there will be a problem of no one being held liable for infringement despite the fact that it exists.

3. The Dilemma of the Intellectual Property Object System in the Context of Artificial Intelligence

3.1 The Scope of Intellectual Property Objects Involved in Ai Creations

Artificial intelligence creations can contribute to the treasury of human intellect and may constitute works protected by copyright law or inventions protected by patent law. A work is an intellectual achievement in the fields of literature, art and science that is original and can be fixed in some form¹. Works are protected because they contain the thoughts, feelings and personality of the author and are an extension of the author's personality. A work must be original. The understanding of originality in practice mostly considers that the work should express any unique personality and ideas of the author and should reflect elements of the author's personality. Although an AI is not a human being, the result of its creation is no different from that created by a human being. So are AI creations works? This type of phenomenon has caused greater controversy, and there is currently a heated academic debate on whether AI creations are copyrightable. Some scholars argue that AI creations lack substantial originality to qualify as works. Some scholars believe that if AI creations are not given copyright protection, the development of AI will be hindered, which is not conducive to the long-term interests of society; without breaking the framework of the existing legal system, AI creations can be given copyright protection by reinterpreting the principle of functional works. Other scholars believe that whether AI creations can be regarded as works is a matter of policy choice for each country, which has to make its own choice by taking into account its own national conditions and analyzing the pros and cons of the consequences that may arise when these creations enter the market. Under the current copyright law framework, AI creations cannot be regarded as works because the subject is not qualified. However, if the status of AI creations as works is denied, a large number of AI creations will flow into the market for free, which is not conducive to stimulating the development of new AI and the creation of new creations. In the long run, it would also be detrimental to the progress and innovation of literature and the arts. Traditional copyright law incorporates this principle and should be flexible enough to accommodate new technologies. Therefore, there is a dilemma as to whether AI creations are works.

3.2 The Issue of Innovativeness of Ai-Generated Creations

On the basis that the intellectual achievements generated by artificial intelligence belong to the scope of the object of intellectual property rights, it is also necessary to contribute to the treasure house of human intellect to a certain extent in order to obtain the protection of intellectual property rights, which is mainly reflected in the originality of copyrighted works and the inventiveness of inventions. The core issue in addressing whether AI creations are copyrightable lies in the understanding of originality. Whether an author requires human genius, or human creativity, or input from anyone, boils down to how the requirement of originality is interpreted. The criterion for

judging originality should be tilted towards an objective criterion of judgement, i.e. it is sufficient that the work exhibits independent creation and a certain degree of creativity. In the author's view, AI creations satisfy the current criteria of originality. First, an AI creation is not a copy of an existing work and is original. The development of technology has given AI a powerful learning ability that can simulate the human mind to process and organise materials to create new works. The process of creation is not a simple simulation of existing works, but a new work created after learning and concluding the thinking. Secondly, instead of mechanically executing instructions, AI creations generate new works autonomously and independently. The existing AI no longer only executes human commands, but has the ability to think and create different works according to different audiences and different requirements, and its output is not strictly controlled by humans. Third, AI creations are no longer distinguishable from natural human creations. At this point, the AI creations should be considered to meet the criteria of originality. Otherwise, there is neither the possibility of exercising intellectual property rights, nor is it fair to deny protection on the basis of source, as copyright law, after all, protects external expression and does not focus on the creative process. Artificial intelligence creations therefore meet the requirement of originality. China's copyright law is largely based on the legislative examples of the civil law system, and the purpose of the legislation is more oriented towards the protection of the author's own value. In the legislative philosophy, works are given protection as they are condensed with the creative efforts of human beings. Even if an AI creation satisfies the requirement of originality, it is difficult for it to be a work under the current concept because it was not created by a natural person. Therefore, if AI creations are protected as works, it would be an expansion of the object of protection under existing copyright law[6].

4. Paths of Change in Intellectual Property Law to Respond to the Dilemma Caused by Artificial Intelligence

4.1 A Choice of Paths of Change for Intellectual Property Law to Respond

The development of artificial intelligence technology has brought about new knowledge products, and at the same time has impacted on the traditional notion of man as the source of creativity, bringing a series of challenges to the intellectual property system. As mentioned earlier, AI has thrown up legal challenges to the IP system, from the subject matter regime, to the object regime, to the rights content regime. We have reason to believe that the development of AI will bring about the most significant changes to the IP system since its inception. In response to the challenges posed by AI, there are two main paths for the IP system to take. The first is a conservative approach, in which the existing system of intellectual property rights remains largely unchanged in terms of subject and object, and artificially intelligent creations are left unprotected and allowed to flow into the public domain. Under the existing IPR system, even though AI creations are no different from human intellectual output in appearance, they are not human intellectual output and are not protected by IPR, and cannot be protected by exclusive rights. Moreover, even if AI creations were to be protected by IPRs, the fact that they do not have the status of author or inventor would place their creation in the public domain. This path continues the traditional subject-object dichotomy and maintains the stability of the IP system. And, in the short term, it can, to some extent, lead to an increase in the public knowledge product. However, the path also has inevitable limitations because it is too conservative. Firstly, as AI creations are outside the scope of IP protection, researchers in the AI field are prone to be less motivated to develop new types of AI due to the lack of necessary incentives, thus affecting the development and prosperity of the AI industry as a whole. Secondly, as existing AI creations are not protected by exclusive rights, their owners will adopt certain secrecy measures and not make them public, which will make it more costly and difficult for society to make use of them. Therefore, keeping the existing IPR regime unchanged is not conducive to promoting the

development of AI technology, nor is it conducive to the prosperity of public knowledge products in the long run, but rather tends to make the exploitation of AI creations costly[7].

4.2 Rule Design for the Path of Change of the Intellectual Property System

An AI could be mooted as a legal person and given legal personality to be the subject of its creations. Artificial intelligence can learn, remember, plan, and argue complexity from its own experience in order to make independent conclusions and autonomous decisions, which is the basis for the creation of their legal personality. Since we can grant legal personality to people with certain cognitive limitations, such as children and mentally ill people, and their creations can be protected by intellectual property law, it is reasonable to mimic artificial intelligence with human thinking capacity as a person in the legal sense. China's Copyright Law stipulates that citizens who create works are authors, and legal persons and other organisations can be regarded as authors under certain conditions. Copyright owners include authors and other eligible citizens, legal persons or other organisations. The Patent Law has a similar provision that the patent right belongs to the inventor or belongs to the inventor's unit. It is thus clear that after the AI is proposed as a legal person, it has the ability to have rights and act. As it completes the entire creative process independently, it is of course entitled to intellectual property rights over the results of its creation. In terms of the purpose of the legislation, the granting of intellectual property rights to AI is not intended as an incentive for it to carry out its own creative activities, but rather as a safeguard for the rights of other human stakeholders. The advantage of this is that it avoids the need to allocate benefits in advance, and instead the contribution to the design and use of the AI determines the share of benefits to be distributed. Such a system would not require major changes to the existing intellectual property regime, but would simply require the AI to be formulated as a subject with legal personality, and other issues could be resolved under the existing system.

5. Conclusion

China attaches great importance to the development of the artificial intelligence industry. The report of the 19th Party Congress proposes to promote the deep integration of the real economy with artificial intelligence. Artificial intelligence technology has developed rapidly, and the types of artificial intelligence creations have also gone diversified. While it expands the knowledge products of society, it also poses a series of dilemmas for the intellectual property system. From the identity of the subject matter to the scope of object protection to the content of rights and their limitations, AI is shaking up some of the principles and concepts inherent in the IP system. The law is inevitably lagging behind, and that is precisely why the current regime needs to be revised. The IP system should be expanded in scope, the standards for recognising the innovativeness of AI creations should be raised, the content of rights system should be improved, and changes should be made to meet the challenges of AI and the advent of the AI era.

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