

The Challenge and Research of Artificial Intelligence to the Legal Problems of Intellectual Property

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Abstract—With the arrival of artificial intelligence era and its increasing influence, the progress of science has promoted the development of intelligent technology. In recent years, robot has become a very common technology product in social life. Artificial intelligence, as a new group, began to be larger and more active in various fields of society. While making our lives more convenient, it has also brought new problems to the legal profession in modern society, affected the way of human behavior, enabled robots to have their own rights in the process of development, and promoted legal change. These are the results of the development and improvement of social forces. Apart from that, artificial intelligence also brings issues in the range of transportation, medical care, finance, human rights and liability, which pose a challenge to the existing civil subject law and tort liability law. This paper taking the intellectual property protection of artificial intelligence as a starting point analyzes the impact of artificial intelligence on the legal rules of intellectual property rights, and points out that only by understanding and dealing with the relationship between them and adapting to the development of the times, can the development of artificial intelligence productivity be promoted and greater creativity be brought into play. What this paper should do is to explore and study the legal problems of different types of artificial intelligence, to provide corresponding solutions and paths for the future legal problems in the development of artificial intelligence, and finally to make use of the intellectual property rights of artificial intelligence. In order to promote the better development of human society, practical social problems are injected into and solved in the proposition of development.

Keywords—artificial intelligence; intellectual property rights; tort liability

I. INTRODUCTION

The concept of artificial intelligence was originally developed by McCarthy J. Presented at the Dartmouth Summer Seminar. Mankind is experiencing a gradual acceleration of the development curve and constant contact with the future. The study of artificial intelligence, from the basic problems of consciousness and intelligence, to the operational problems of computer machine learning and machine-to-natural language communication, the idea of "artificial intelligence" starting from a vision of the future of science fiction "into the home of ordinary people" has become a high-frequency word in mass media and in everyday conversations. In order to take the lead in this new area of technological change, both government agencies and

commercial groups are actively promoting of this field research and application. The development of artificial intelligence in China is very rapid, and it can be imagined that under this trend, the results of research will be published one after another, and various views will emerge one after another. Moreover, it can indeed enhance the challenges posed by legal research to new technologies. With the popularization and application of artificial intelligence, it has formed contact and interaction with all aspects of social life, legal research will also enter a new field, the development of artificial intelligence technology is changing or even subverting the existing mode of production. The way of life and the way of communication, artificial intelligence law as a new academic growth point, in a short period of time formed the explosive growth. The content produced by artificial intelligence is not only conspicuous in creation mode, but also worthy of our attention in expanding imagination space. At present, more than 1/5 of the formal lawyer business has been replaced by artificial intelligence, artificial intelligence is accelerating into the human society, the emergence of its artificial intelligence content is a breakthrough event, breaking many inherent views, this poses unprecedented challenges to today's moral standards, legal rules, social order and public management systems. It can create greater value in a shorter period of time, which is unmatched by human creation, which is produced by artificial intelligence. There is no doubt that the content of the potential market value. This trend poses a severe challenge to the legal system of intellectual property created by the protection and encouragement of intellectual property, and has a significant impact on the intellectual property system of a country's economic and technological development. The biggest difference between AI and other technologies is the ability to think and learn in depth. Clearly, People must feel happy with this great technological invention and welcome the beginning of a new era, meanwhile, people must calmly think about a series of social problems brought about by hot spots. The protection of intellectual property is also one of the most important problems of building an innovative country.

II. ARTIFICIAL INTELLIGENCE PROMOTES THE DEVELOPMENT OF LAW

After extensive research on the legal problems arising from artificial intelligence, it is found that the existing literature and research tend to take the law as an external

factor to deal with the influence of law on the development of artificial intelligence. New legal problems arise and how to regulate the development of artificial intelligence. The ability to think and learn in depth is the biggest difference between artificial intelligence and other technologies. At present, more than 1/5 of the formal lawyer business has been replaced by artificial intelligence; artificial intelligence is rapidly sweeping the human society. Turing once said that artificial intelligence could one day threaten the survival of mankind. Before these problems develop to a point where is difficult to recover, appropriate legal norms to the development of AI should be formulated. In the development of artificial intelligence, there are some questions, such as whether robots can enjoy copyright and laws related to self-driving of intelligent vehicles, and so on. Robots have more and more powerful intelligence. The difference between robots and humans may be much narrower, so future robots will have biological brains that even match the number of neurons in the human brain. In addition, how do robots as a manifestation of human intelligence, co-exist with human in an orderly manner in society. Although there are many technological innovations in this series of problems, they can basically be tasted. It is available to try to incorporate it into the legal framework of traditional intellectual property law, tort law, administrative law and other frameworks. People also pay attention to how to deal with the legal personality, rights and obligations when artificial intelligence appears in society. The content generated by artificial intelligence or human works is mainly used in the fields of painting, composition, fiction and so on. There is no essential difference between the content generated by artificial intelligence and the content generated by human beings. Programmers use program code to program common syntax and semantic expressions of human beings. The essence of artificial intelligence output is code. The difference between the content of artificial intelligence creation and the content of human creation is subtle, sometimes can even reach an indistinguishable level. Although some artificial intelligence can generate new content by learning and judging, artificial intelligence is a pre-implanted path during programming. At this stage, artificial intelligence uses machine learning and simulated brain neural network technology to collect data and learn different operational logic as needed. Such artificial intelligence may produce different content based on what humans want, but it is still not free of programmer settings. These are related to the legal status of artificial intelligence, legal liability, rights and obligations and so on. When the legal system is unable to respond effectively to the actual situation, the legal theory must first of all clarify artificial intelligence. Whether can have the legal personality or not.

III. LEGAL SUBJECT QUALIFICATION OF ARTIFICIAL INTELLIGENCE

The clearness of artificial intelligence legal subject qualification is the basis of the legal relationship between human and intelligence. In the legal relationship with artificial intelligence, whether it is the legal subject or the legal object, this directly determines the way that human beings treat artificial intelligence. In ancient Roman slave

society, even natural persons may have no legal subject at all. The law gives the subject "no marital qualification, no trading qualification, no right subject, but a subject matter". Therefore, in the presence of other natural persons with legal subjects, slaves do not belong to the same category, but exist as "things". They can not only be bought and sold at will, but also can be insulted or killed. The subject who breaks the law or commits a murder is only liable for property infringement against slave owners. But artificial intelligence, unlike slaves, does not have the same basic attributes as human beings. Therefore, human beings can decide whether to use them as subjects or objects of law, and will not be questioned by the theory of equality of human rights. In 2017, Hanson's intelligent robot, Sofia, was granted citizenship by Saudi Arabia, meaning that Sofia had civil rights as a robot, just like any Saudi natural person. This is also a legal fact that belongs to an individual phenomenon, not a universal regulation. What's more, the subjective qualifications of robots have emerged. Is artificial intelligence a machine or a person? This is a difficult problem for intellectual property law and even private law. In jurisprudence, the dichotomy between subject and object is a basic principle, but the insurmountable gap between subject and object is changing now. However, with the further development of technology and the gradual independence of artificial intelligence, human beings have the same emotional needs, such as the establishment of marriage or parent-child relationships, or simply for the convenience of civil and commercial relations, and hope to be recognized by law. So far, one of the most important changes in the age of intelligence is the biography. The main and object framework of the Unification Law has been broken, and human genetic material cannot be considered as a single object, and robots without life but with artificial intelligence may also be legally qualified. In order to solve the above problems, the confirmation of artificial intelligence legal subject qualification needs multi-party authentication. Some scholars of intellectual property rights in China object to giving legal meaning to intelligent robots. Both natural and legal persons have human-specific wisdom, including mood and spirituality, while artificial intelligence is not available. The design and production of intelligent robots are designed for the convenience of human beings. They do not have their own independent purpose and are always under the control of human beings. It is believed that intelligent robots not only have no intrinsic perceptual ability, but also do not possess the responsibility of life and right to life, as well as the ethical, moral and conscience responsibilities of the subject. There are also some scholars in favor of artificial intelligence to obtain the subject qualification, for example, the scope of the civil subject is expanding, natural persons and legal persons are also commonly referred to as the main meaning of the person. In this way, human intelligent robot can also become a civil subject. The emphasis of legal person personality lies in the will ability of natural person and legal person. Artificial intelligence is not a natural person with life, nor is it a legal person with its own independent will. Body-controlled artificial intelligence is not an independent subject state. Therefore, in the age of artificial intelligence, artificial intelligence does not replace or exceed human intelligence,

so it is inappropriate to shake the foundation of civil subject system.

IV. COPYRIGHT OF ARTIFICIAL INTELLIGENCE WORKS

In the present copyright law, there are two ways to obtain it. One is that the natural person creates his own works through intellectual labor, the other is the copyright obtained in special works, such as the work of the unit, legal person or other organization, and the entrusted work, which are made by law. As far as the difference between artificial intelligence and natural person is concerned, human creation is a kind of intellectual activity involving human thought, emotion and expression, which can only be realized through the feeling and thinking of flesh and blood of natural person. From the angle of historical materialism, human consciousness has sociality. People can think because human thinking ability is the product of long-term social labor and time, computer this property cannot be simulated. If artificial intelligence can become the main body of copyright, then the machine, software and algorithm cannot exercise its rights as the carrier of artificial intelligence. If they do not exercise their rights, they will not discuss the meaning of rights. Although robot is far more efficient and accurate than human beings, there is still no ideology in this process. It cannot be thought like human, nor can it carry out creative intellectual activities. Copyright law regulates the internal social relations of human society, not the relationship between man and machine, man and animal. At present, artificial intelligence also brings some problems to copyright law, for example, the problem of "copyright" of robot-generated works. Because the scope of copyright protection is related to the creators' ideology, this is a collection of literary, artistic and scientific works. This work must be original, that is, "the work is the author's own work and is not copied at all from other works, and it is difficult to identify works produced by artificial intelligence and works created by human beings in terms of" ideal expression "and its original requirements. Because they have the "copyright" condition of general works. The crux of the question here is that the author only refers to the human author; then, can it include the robot author? Human intellectual activity can be called "creation." The intellectual creation of human beings can be regarded as "works". Well, the works created by artificial intelligence are also the result of human-computer cooperation. This also covers the ideological design of human beings. It is not just a machine. Copyright law not only encourages people to create, but also balances the benefits of artificial intelligence. Artificial intelligence has influence on copyright law and cannot balance new interests. Copyright law should meet the requirements of society and different interest groups. Since intellectual property is established to protect the public interest, if the relationship is not balanced, the protection of rights is too much or insufficient to protect the rights deviated from the original significance of the enactment of the law. In the process of artificial intelligence creation, a large number of stored text corpus and processing synthetic language model itself are creative work including the wisdom of human authors. It is not possible to deny its "copyright" because the subject of the work produced by artificial intelligence is not a natural

person, to protect the content of artificial intelligence, and to provide certain economic benefits to the author or communicator, and to encourage the author to create more works and enrich the cultural market.

V. PATENT PROTECTION OF INVENTION RESULTS OF ARTIFICIAL INTELLIGENCE

Artificial intelligence technologies and applications around the world are being promoted through explosive growth as a patent system that encourages inventions, advances in science and technology and economic and social development, it is also necessary to provide patent protection for artificial intelligence technology at the current stage of weak artificial intelligence development. The industrial revolution gave birth to the intellectual property system. With the continuous development of industrialization and the service of the market economy, different industrial development will have different degrees of protection, especially in the environment of national participation in international competition. The combination of AI patent protection with the development of standardization work plays a supporting and dominant role in the development of artificial intelligence and its industrial standardization. Modern society is the mode of sharing economy and open innovation. It will aggravate the competition of intellectual property market and promote the rapid transformation of intellectual property system. Therefore, the dominant position in competition must be the priority of patent right in artificial intelligence technology field. Artificial intelligence also has patent rights protection in the field of computer technology and business model. It challenges the basic concept of patent system and the problems and challenges facing standardization in the field of artificial intelligence. Including the rapid development of artificial intelligence technology and related products, it is still difficult for the industry to reach consensus on its connotation, application mode, intelligent level, etc., according to artificial intelligence. If artificial intelligence is seemed as the inventor, there will be more conflicts of legal theory. If artificial intelligence can prove that the results are sufficient to satisfy the conditions conferred by patent right, it is totally unfair and unreasonable to deny the object of patent protection simply because the inventor is not human. Whether the country or the enterprise should strengthen the awareness of intellectual property rights, the development of artificial intelligence must rely on the mutual integration and development of various industrial fields, provide patent protection for the results of artificial intelligence invention, and can also achieve the purpose of encouraging innovation. Although the legal system does not confer identity on the inventor of artificial intelligence, it is also a good solution to recognize the patentability of the results of artificial intelligence inventions and to identify those who make minor contributions as patentees in the process of invention, so he can have the corresponding rights and undertake certain obligations. However, it may also lead to problems such as junk patents, waste of resources and increased burden of patent review, while ensuring the relative stability of the legal system, by introducing the *Regulations on Intellectual Property Management of Artificial Intelligence* as the

transition of the development stage of artificial intelligence industry is also a practical method to make inventors and specialties. While allocating the rights of the patentee according to the particularity of artificial intelligence, the rights of the patentee should be set up with the corresponding responsibilities and obligations for the patentee.

VI. CONCLUSION

To sum up, everything is pre-established, not pre-emptive. The advent of the artificial intelligence technology era began to pose a number of challenges to the human legal system. It is unlikely that all legal problems can be solved through a single legislation, and the law must change in accordance with social development and change. The great changes brought by artificial intelligence to social life require the legal system to change and adjust in a timely manner. The research on the legal status of artificial intelligence should be carried out in an all-round way, focusing on different types of artificial intelligence, which can have different legal status. Artificial intelligence aims to serve human beings. Its consideration is more about "human nature." At present, artificial intelligence is still under human control. There's no need to worry artificial intelligence to much. It would be better to embrace the advent of artificial intelligence era, coordinate the progress of artificial intelligence, and seek more benefits for mankind. This paper also discusses the application of artificial intelligence in the scope of copyright law, classifies and discusses the application of artificial intelligence in the field of copyright and different stages of development, whether artificial intelligence can become an author, and so on. Starting from the basic concept of copyright law, it can be a task to explore how the content generated by AI is protected by existing systems.

The original intention of discussing the copyright of the content generated by artificial intelligence is not intended to come up with a clear answer, but to understand the nature of artificial intelligence. How to adapt the copyright legal system to the development of artificial intelligence is to expect the revision of laws and regulations to improve or modify its contents in order to obtain a more reasonable solution. The essence of copyright is to give the author a certain monopoly right in a certain period and field, finally promote the development of social innovation, improve the overall welfare of the society, and promote the progress and development of the whole society. From this perspective, stay cautious when balance the stability of sociality and legal, at the same time, keep opening to the definition and protection of artificial intelligence in copyright law to meet new challenges. In patent in terms of power, China is in the initial stage of artificial intelligence innovation and creation. In order to meet the requirement of encouraging innovation, as the result of artificial intelligence invention patent, it is appropriate to identify the group that has important contribution to innovation and creation. The owner of artificial intelligence has invested a great deal of technical and financial support for organizing and supporting the research and development of artificial intelligence, and has made important contributions to the realization of the results of artificial intelligence and artificial intelligence invention,

as the patentee of artificial intelligence, he has a good demonstration effect, but also has a strong driving force for the development of artificial intelligence industry. In the examination of novelty, the criteria for judging its novelty should be properly raised in order to prevent the production of a large number of garbage patents, indirectly improving the entry threshold of invention patents. In reviewing practicality, the necessary intervention and participation in the implementation phase should be considered as one of the factors to be considered. In order to prevent invention patents from breaking away from the needs of society, seriously polluting the environment and harming personal health, it is also necessary to pay attention to granting these patents. In examining creativity, raising the threshold of creativity, patent protection of the results of artificial intelligence inventions, patent system will also respond as soon as possible, giving us the right value guidance for the development of artificial intelligence industry. From the emergence of intelligent technology to the development of intelligent products, to artificial intelligence the emergence of the industry, in a very short period of time, the speed of artificial intelligence far exceeded people's expectations. people should welcome new technologies, with an open and inclusive attitude, to promote legal progress. It provides a good research perspective for us to solve the problem of how to adapt the generated content of artificial intelligence to our laws. Although the development of artificial intelligence has not been broken by man-made control, it has not prevented us from expecting its prospect.

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