

From Animals to Artificial Intelligence: Non-Human Beings' Intellectual Property Protection by “Judicial Capacity for Copyrights”

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Abstract

Since artificial intelligence has completed the process from the auxiliary tool of human creation to the independent creation completion of works with formal appearance, it has brought many legal issues that have caused widespread controversy. Among them, whether artificial intelligence has the qualification of legal subject and whether the products of artificial intelligence should be protected by law is the focus of the problem. In the legal circle, the involvement of the theme of “non-anthropocentrism” can be traced back to the debate between animal legal personality and non-human ecological rights. The *Naruto v. Slater* Monkey selfie case and the *Pigcasso* light people’s debating about animal copyright, and artificial intelligence provides a new research perspective and reinvigorates the research on animal copyright. By means of the analogy research of animals, humans and artificial intelligence, this paper explores the rationality, necessity and feasibility of investing non-human beings with quasi-legal subject qualification in the special subdivision field of law—copyright. Quasi-legal subject qualification means that artificial narrow intelligence and animals are endowed with judicial capacity for copyrights and limited capacity to act. At the same time, the designers of artificial intelligence, animal breeders and the government and so on serve as the quasi-guardian of artificial intelligence and animals. In addition, artificial general intelligence and artificial super general intelligence are endowed with completely independent legal capacity to act, and the quasi-guardian system is terminated. The quasi-guardian system is perfectly compatible with the existing legal framework from the perspective of development. It protects the ownerless intellectual property from the free lift, thereby helping avoid the tragedy of the commons. Furthermore, it solves the problem that animals and artificial narrow intelligence cannot independently safeguard their rights and provides a forward-looking theoretical model for the system construction of

non-human copyright.

Keywords

Artificial Intelligence, Copyright, Legal Capacity for Rights, Legal Subject Qualification

1. Introduction

Can animals create works of art? The monkey selfie copyright case in 2014 has aroused colossal attention worldwide (Phillip, 2014). In the case, a wild macaque secretly got the photographer's camera, and then pressed the shutter to take many photos, three of which were very clear, which were liked by many netizens and brought substantial economic benefits to the photographer (Naruto v. Slater, 2018). Later, the images were used by Wikimedia Commons without notifying the photographer, and the photographer sued Wikipedia in court for payment of royalties. But here comes the problem. The macaque's self-portrait is independently created, and the photographer doesn't have the qualification to enjoy the copyright of these photos. According to the Copyright Law of the US, only human beings have the legal subject qualification. Consequently, these photos can only be treated as no-owners works and remain in the public domain. Such a judgment has also caused heated controversy (Guadamuz, 2016). Some people think that the case is appropriately decided and that macaque should not have legal subject qualifications; some people hold the view that not protecting the copyright of animals is not conducive to innovation, and will allow people to misappropriate these works that are not created by themselves. The monkey selfie is not the only case of animal copyright disputes. Nanjing Hongshan Orangutan Zoo also published a book, "I am not a brutalist", painted by three orangutans in 2021. The zoo hopes to use this book to call on everyone to protect the orangutan and the tropical rain forest in which they live (Hongshan Zoo, 2021). Naturally, the author and beneficiary of this book is the person in charge of the zoo. Furthermore, recently a painting named "the wild and free" painted by the world-renowned painting pig Pigcasso was auctioned for a high price of 20,000 pounds, which once again attracted the attention of the public. Pigcasso is best known for being the first non-human artist to host her art exhibition and for collaboration with the watch maker Swatch to design its 2019 limited edition Flying Pig Watch (Bloomberg, 2019). Whether it is legitimate for Joanne Lefson, the breeder of pigcasso, to have the financial interest of the £20,000, and whether pigcasso's work has originality in copyright law remains a mystery.

Animal artworks are easily associated with works created by artificial intelligence. In 2017, the poetry collection "Sunshine Misses Windows" created by Microsoft artificial intelligence Xiaobing was published and sold for a high price of 50 yuan, causing a sensation. However, due to the difficulties in safeguarding

rights and the need for publicity, Microsoft artificial intelligence Xiaobing has announced on its website that it will give up the copyright of her poems (Xinhuanet, 2017). The Feilin case, one of the top ten intellectual property cases in the world in 2019, was known as the first intellectual property case in China. In this case, the Baidu Company copied the article generated by the legal statistical data analysis software published by the Feilin law firm on the official account platform. Feilin then filed a lawsuit in court. Finally, the court ruled that the defendant Baidu Company's act of providing articles in the case through the information network without permission constituted infringement (Feilin v. Baidu, 2018). The Tencent case is similar to this case. The article created by Tencent dreamwriter intelligent writing assistant was plagiarized and published by the website of PCCW. Finally, the court ruled that the defendant's unauthorized use of the plaintiff's work constituted infringement (Tencent v. Yingxun, 2019). Based on the two cases above, we can conclude that the lack of copyright regulations on artificial intelligence products makes the court at a loss when deciding. It is urgent to establish a reasonable legal system for artificial intelligence products.

From macaque and Pigcasso to Microsoft Xiaobing, dreamwriter, they are all non-human creative beings with creative ability resulting in copyright disputes. As a result of new scientific and technological development in recent years, the legal issues of artificial intelligence products can learn from the animal rights protection theory which has a long history. Meanwhile, the emergence of new artificial intelligence theories can also provide a new research perspective and inject new vitality into the establishment and improvement of animal intellectual property law. By means of analogy reasoning, the paper deems that we should introduce the dichotomy system of capacity for rights and capacity to act in the traditional German civil law to the field of copyright, and establish a quasi-guardian system for animals and artificial narrow intelligence by analogy with the guardian system for persons with no or limited capacity to act.

It is crucial and urgent to study the problem of non-human copyright. Artificial intelligence and animal copyright protection legislation are urgently needed to protect innovation and avoid the tragedy of the Commons. Even if other fields are not convenient for protection for the time being, the copyright field must establish a protection system as soon as possible. The existing non-human copyright research cannot wholly solve the institutional problem that artificial intelligence cannot independently safeguard rights. Consequently, it is urgent to create a theoretical model compatible with the current legal system and able to protect non-human intellectual property rights in legislative technology. The development speed of artificial intelligence is accelerating every five years. Artificial general intelligence may come out one day in the future. At that time, human beings must face the legal subject qualification of artificial intelligence. If we are not prepared now, there will be a lot of problems at that time.

To achieve the research goal, this paper mainly adopts the following research

methods:

1) Analogy analysis: This paper compares animals with artificial intelligence, animals, weak artificial intelligence with incapacitated people, and compares the maintenance of human rights for animals and weak artificial intelligence to human guardianship systems for people with no and limited civil capacity. Through analogy analysis method, we can use the existing legal system to describe and construct a new field of law that is difficult to describe.

2) Historical analysis method: historical analysis method is mainly applied in analyzing the possibility of extending legal subjects by analyzing the history of legal personality subjects, determining the technical essence of artificial intelligence products by analyzing the history of artificial intelligence, and analyzing the feasibility of non-human quasi-legal subject qualification by studying the historical background of the dichotomy system of capacity for rights and capacity to act.

2. Analysis on the Copyright Research of Non-Human Beings

2.1. Identification of the Essence of Artificial Intelligence-Generated Works

In 1950, a test on whether artificial intelligence has the ability of thought was proposed by Alan Turing in his paper “Computing Machinery and Intelligence” while working at the University of Manchester (Turing, 1950). Six years after that, a seminar held at Dartmouth College blazed a trail in the domain of artificial intelligence (Solomonoff, 1985). American computer scientist John McCarthy argued at the conference that “allowing machines to achieve the same behavior as humans” can be called artificial intelligence (Kaplan & Haenlein, 2019). Experiencing two ups and downs in the latter half of the 20th century, the awareness and input of artificial intelligence in the first decades of the 21st century have been flourishing when machine learning represented by deep learning and neural networks and easily accessible big data are successfully applied in artificial intelligence industrial and academic R & D.

The rapid development of artificial intelligence has also brought many new legal issues, including personality rights, protection of data property, determination of tort liability, among which how to evaluate the essence of works created by artificial intelligence becomes the pre-focus of this paper. To solve this problem, firstly clarifying the definition is needed. Different to that of John McCarthy, the definition of modern artificial intelligence research is no longer limited to the imitation and display of “human” cognitive skills that are associated with the human mind, such as “learning” and “problem-solving” (Poole et al., 1998). Instead, artificial intelligence is academically defined as any system that perceives its environment and takes actions that maximize its chance of achieving its goals (Russell & Norvig, 2021). The change of this definition can reveal the transformation of artificial intelligence from an auxiliary tool of human creation to an independent subject of literary and artistic creation.

Secondly, we should have an overall understanding of how artificial intelligence creates art and literature works to define the attributes of artificial intelligence. The usually used frameworks generative adversarial network (hereinafter referred as GAN) makes two neural networks contest (Creswell et al., 2018). One network generates new images, while another network criticizes them. This process can be more efficient and effective by adding feedback loops between the two networks. The model has been proved to be very successful in creating satisfying results in many art genres (including digital painting, sketch, sculpture, photos, videos, music, etc.), all without human participation. It also produces a unique artistic style, which is usually difficult for humans to classify as artificial intelligence-generated, which shows its complexity and depth (Goodfellow et al., 2020). Today, many popular artificial intelligence systems use artificial neural networks to simulate networks composed of elementary interconnected units, like neurons in the brain. These networks can learn experience by adjusting the connections between units, a process similar to human and animal brains by modifying the connections between neurons. These programs run on neural networks with millions of units and billions of connections. The “intelligence” we can create now is composed of these electronic neural networks. Combine a large amount of data with supercomputing processing ability and intelligent algorithm to establish a model to solve specific problems, so that the program can automatically learn potential patterns or features from the data, to achieve a way of thinking close to human beings. We can easily conclude from the introduction above that although the design and manufacture of artificial intelligence are entirely carried out by human beings, the behavior implemented by artificial intelligence cannot be completely controlled by human beings. To a large extent, how artificial intelligence behaves is not pre-designed by human beings. In a sense, it has independent thinking ability similar to human beings. artificial intelligence-generated objects are challenging to identify without telling the source. Deep learning technology enables artificial intelligence to be trained enough to continuously improve itself and produce works that are indistinguishable from human creations. Based on the integration and refinement of existing works in the early training, artificial intelligence can independently select the most suitable template for nesting when faced with specific materials. Although specific materials are collected and input by humans, the works are generated without humans’ involvement. The operator may have some superficial cognition about the arrangement of the segments of the generated text work or the level of the composition of the generated image work. Still, it is difficult to make accurate predictions. Artificial intelligence does not assume the role of an auxiliary tool in generating works, but has substantial autonomy and intelligence. Although the user and the artificial intelligence may appear to participate in the creative process simultaneously, it lacks the foundation for co-creation because the operator’s contribution to the final creation is small.

There has been a long-standing debate about the legal subject qualification of

artificial intelligence. As early as 1985, Freitas raised the question of whether or not to build “robot personality” for “robots with self-awareness and ability to make moral choices”. In 1992, Sorom’s classic paper on the legal subject of artificial intelligence pointed out that, artificial intelligence can act as a trustee with limited purpose (Levy, 2009). Since the 20th century, artificial intelligence through deep learning of big data has been able to independently complete achievements with the form and appearance of human creative works without relying on human creation. The theories on artificial intelligence’s legal subject mainly include the following factions: “Does the behavior of artificial intelligence belong to creation?” “Does the behavior of artificial intelligence constitute expression?” “Does artificial intelligence have autonomy?” “Does artificial intelligence work meet the originality standard that excludes human beings in copyright law?”, these problems have plagued many scholars in the field of intellectual property law, and many views have been vigorously debated.

Chen Hu deems that the current artificial intelligence-generated content lacks originality, and only has the expressive effect of similar works in appearance (Chen, 2018). Chen Hu is oblivious to the rapid development of artificial intelligence, which is now not the developer telling the program how to create, but the algorithm itself learns how to create through data training. The algorithm that learns through continuous training from cases and data no longer needs to rely on hardware and pre-defined rules like traditional computers, and thus achieves independent creation. It is absurd for Chen Hu to deny the originality of works created by artificial intelligence on the grounds that artificial intelligence creation is a tool for human creation of works or, on the premise of a fixed algorithm, using materials related to the subject of creation. If this logic of argumentation is adopted, all works created by human beings are not original, because the premise of human creation is based on reading other people’s works and combining them with their own thoughts and perceptions. The logic of their creation is based on a “fixed algorithm” of their thoughts and perceptions, i.e. the rules of perception (Xue, 2019).

Yang Lixin believes that artificial intelligence is a particular object with “supreme materiality (Yang, 2018). Yang Lixin recognizes the special characteristics of artificial intelligence in comparison with other things, but he holds a conservative attitude towards the legal subject qualification of artificial intelligence, and advocates that artificial intelligence should be given the “supreme materiality” to solve a series of problems brought by artificial intelligence. However, under the existing legal dichotomy between persons and things, the “supremacy of things” cannot solve the problem that there is no copyright owner for artificial intelligence independent creations. Some scholars suggest following the legal person system to solve the problem of artificial intelligence creation. However, there is no connection between the artificial intelligence itself and its inventor, trainer or user that is similar to that of job creation (although there is also some kind of subordinate power relationship). In fact, there is no “contractual rela-

tionship” between the two that has the legal rights and obligations formed by “agreement” between the employee and the hirer. “Therefore, it is difficult to judge the scope of duties and control power relationship of artificial intelligence. Furthermore, the system of “corporate works” itself is controversial in the academic community.

Some scholars believe that even if the creative ability and content of artificial intelligence have escaped human control and mastery, the final decision on whether to “create” and “how to create” is still in the hands of humans. The fact that artificial intelligence cannot be completely separated from human creation does not mean that it does not have the subject qualification of creation. The creative behavior of infants and young children has “adult personality elements”, but it is still an original act, and creation is more of a factual act. The input learning stage of artificial intelligence can be compared to a legal person assigning a natural person to create. The legal person decides whether to create, how to create, and extensive training for employees to teach them to create. Research by Cornell University’s Artificial Intelligence Laboratory has shown that artificial intelligence can autonomously decide whether to engage in a specific behavior without human intervention (Zhang, 2017). In many cases, human intervention will only hinder the development of artificial intelligence. For example, the computing power of Alpha Zero, which is entirely self-taught, is much higher than that of Alpha Dog, which learns from human chess manual.

Some scholars argue that artificial intelligence is still a tool of human creation, and that all of its actions carry an element of personality. In fact, not all behaviors that involve human beings carry the element of personality. Although the design and manufacture of artificial intelligence is entirely human, the actions performed by artificial intelligence cannot be fully controlled by humans, and how artificial intelligence performs is largely not pre-designed by humans, in the sense that it can think independently similar to humans. Humans can write algorithms that give instructions, but they cannot fully control the content of the results, only the direction of the work. The work created by the artificial intelligence is not the will of the designer. Instead, the designer only delineates the scope of the artificial intelligence creation and teaches the artificial intelligence the ability to create, while the output is uncontrollable, similar to the breeder providing brushes to pigcasso and taking it to various scenes to “take scenes” and “observe”.

Scholars who hold the artificial intelligence subject negation theory argue that artificial intelligence deep learning and self-determination are actually the result of algorithms rather than the machine’s own independent consciousness, and that it executes only the will of the designer or operator. In fact, young children creators also do not have their own independent consciousness, but they do not perform only the will of the designer or operator. Human creativity is also the result of an “algorithm” of the nervous system composed of several neurons, and its own independent consciousness is not a necessary condition for copyright.

Once animal artworks and artificial intelligence are created, the subsequent results will no longer be entirely the expression of the will of the designer. Hegel believed that biological human beings must have free will in order to become human beings, and the essence of human beings is also free will. Hegel's doctrine of "will-personality-property" is considered the cornerstone of contemporary civil law and intellectual property law, which holds that "man has the right to embody his will in an external thing, and thus to make that thing (Hegel, 1896). In the case of copyright, it means that the work is the externalization of personality, and the author has the exclusive right because of the personality embedded in the work. Opponents argue that both inanimate objects, animals and corporate legal persons, unlike slaves, can never become self-made subjects in the true legal sense, because they lack the core element of becoming legal subjects, free will. Free will is defined as the ability to think, decide, and act independently and with sufficient awareness of the consequences of one's actions to adjust them accordingly. Opposition theorists believe that free will is the core element of legal subject, and is the benchmark for judging whether artificial intelligence is a legal subject. As mentioned above, the lack of autonomous consciousness, will and rationality are often cited as strong arguments against artificial intelligence subjectivity, but autonomous consciousness is only a sufficient but not necessary condition for constituting a legal subject; infants and mentally ill people also do not have free will, but works created by young children and mentally ill people are equally copyrighted, and for these people they are usually not aware that they can create. Scientific experiments in cognitive psychology have found that children under the age of 5 Children cannot pass the mirror self-recognition test, which is considered to be a sign of lack of autonomy, but there are many cases of children under 5 years of age creating valuable works of art that are protected by the current copyright law. This proves that lack of free will can still be a subject of law, while it cannot be said that without the ability to claim rights one cannot be a subject of law. Han Xuzhi in his paper argues that both will and rationality are exclusive to human beings, and believes that both mentally ill people and minors have the possibility of achieving rationality compared to artificial intelligence. In fact, the artificial narrow intelligence with independent consciousness has the possibility of being upgraded to artificial general intelligence. Since human beings can give legal subject status to mentally ill people who lack capacity to act out of human civilization, they should also give legal subject status to artificial intelligence based on the concept of "equality between carbon-based and silicon-based organisms".

To what extent can artificial intelligence decide whether to create and how to create works? The current creative progress made by artificial intelligence in the field of copyright already shows that it may have the expressive ability to develop, revise and produce works independently from the predictive ability of inventors. Nowadays, although artificial intelligence lacks autonomous consciousness, it has been able to carry out autonomous activities based on elaborate algo-

rithmic mechanisms beyond the designer's design, such as generating adversarial networks and neural networks, and the essential simulation of part of human will has been achieved. First of all, we must distinguish between artificial intelligence as an auxiliary tool and artificial intelligence with autonomy. The current artificial intelligence market is a mixed bag, with a large number of inferior artificial intelligence, even derisively called "artificial retardation". The artificial intelligence is just a product sales gimmick, in fact, not related to artificial intelligence. There is also a part of the widely used auxiliary artificial intelligence, which can't create works by itself. The existence of these artificial intelligence does not negate the existence of artificial intelligence that does possess autonomy. This paper advocates treating auxiliary artificial intelligence as general objects and treating them as tools for human creation, while granting the status of quasi-legal subjects only to artificial intelligence with autonomy. In addition, it is important to prevent the argument for the denial of artificial intelligence subject qualification from falling into the whirlpool of circular arguments. Most of the scholars who hold negative arguments for the subject qualification of artificial intelligence take artificial intelligence not being human as the primary argument, and they harshly and arrogantly believe that as long as artificial intelligence still differs from humans in thinking, it cannot be a legal subject. Will and reason will always be exclusive to human beings, and "legal human" is equivalent to "biological man" is equivalent to "biological man". For example, many denialism scholars believe that artificial intelligence is just a cold string of code, just the result of algorithmic programming logic. For example, Scaruffi writes in his book: talking about the intelligence of machines is like discussing the leaves of people. They avoid talking about the explanation of human consciousness in today's brain science, the result of multiple neuronal networks of electrical signals acting together, which, in essence, is also the result of the transmission of neuronal electrical signals, not the sacred "illogical choice" of the denialisms.

2.2. The Doctrine of Legal Recognition of Artificial Intelligence Products

The doctrine of the fruits of artificial intelligence-generated objects cannot solve the problem of copyright ownership. If artificial intelligence is legislated as a thing, then artificial intelligence-generated things are the fruits of artificial intelligence, which are "creatures of things". Huang Yuye believes that the owner of the hardware should be recognized as the owner of the original object (Huang, & Sima 2018). In fact, according to copyright law, granting intellectual property rights to the owner of the hard disk instead of the developer of the artificial intelligence is as absurd as granting copyright to the owner of the painting instead of the painter. The fruits doctrine results in artificial intelligence-generated objects that have no author in the copyright law and remain unowned. Bypassing copyright law and the copyright system to give property value to intangibles only protects the property rights of works but not the personal rights of works. More

importantly, if we analyze the hardware owner (owner) - artificial intelligence hardware (original object) - artificial intelligence generated object (yield) by using the yield theory, and the breeder owner, Picasso (original object), animal generated object (yield), according to the civil law, the yield has property value and its property right belongs to the owner; according to the intellectual property law, the yield is automatically generated by the object and there is no author who meets the requirements. According to intellectual property law, fruits are automatically generated and have no conforming authorship, and should enter the common domain. Civil law and intellectual property law reach completely different conclusions, and the application of the fruits theory to the analysis of intangible property makes the law contradictory and does not provide clear guidance to the public and the judiciary. Therefore, it is inappropriate to use the tangible property theory of fruits theory to analyze the intangible property theory of artificial intelligence creations. What's more, Huang Yuye believes that the creation process of artificial intelligence is similar to that of compilation works, and advocates that compilation works should be used to regulate artificial intelligence-generated objects under the existing legal system, which is obviously not in line with the objective situation of autonomously created artificial intelligence. A compilation work is a work that compiles several works, fragments of works, or data or other materials that do not constitute a work, and the selection or arrangement of its content reflects originality. The act of "compilation" of input materials for artificial intelligence is only the learning process of artificial intelligence, and the process of creating new works through its neural network algorithm that simulates humans is no longer a compilation work.

Some scholars believe that even if artificial intelligence is given the status of a legal subject of copyright, because artificial intelligence has no independent consciousness and no independent ability to take responsibility and defend rights, the final legal rights still belong to the designers and users of artificial intelligence. Zheng Ge believes that no matter how the robot assumes responsibility, even if the concept of "electronic person" is proposed, the ultimate responsibility bearer is human (Zheng, 2017). This makes its "legal personality" superfluous and unnecessary. To solve this issue, we should know whether the developers and designers of artificial intelligence can assert copyright over the products independently generated by the artificial intelligence they develop. This has been argued as a matter of course by scholars who oppose artificial intelligence subjectivism, but in fact the creations of artificial intelligence enabled by neural networks and deep learning are largely not works created by developers alone, but rather works created jointly by developers and artificial intelligence, and users, and should be financially rewarded according to their contributions. Human beings are not qualified to claim that the inventor created the work autonomously created by artificial intelligence, just as the breeder of an animal cannot claim the copyright of the animal's autonomous painting. The copyright of an artificial intelligence-generated work does not necessarily belong to the natural

person who gave instructions to the artificial intelligence to create the work. The existence of the developer as a human being does not hinder the existence of the artificial intelligence as a subject. Considering the negative impact of the tragedy of the commons on the society and economy, the quasi-legal subject of copyright of non-human subjects is not said to be meaningless, as some scholars say, but to give governmental and non-governmental organizations the right to defend the rights of their guardians in order to better protect intellectual property rights and reduce impersonation and abuse. If free-riding is left unchecked, it will not ensure investors' opportunities to recover their investments, will lead to a weakening of the creative will of those devoted to knowledge creation, and the public will be disadvantaged by the shrinkage of the total amount of knowledge. The object of protection under the current copyright law is called works, and works refer to an intellectual work of originality in the fields of literature, art and science (*Copyright Law, 2020*). The completion of a work depends on the creative intellectual work of its author. Thus, even if, as other public sources state, David set up the camera and the macaques took their own pictures in between his absence, simply providing the equipment cannot be considered creative intellectual work, and David is not entitled to copyright in the macaque selfies. Artificial intelligence generation is similar to this. The programmer only wrote the code to generate the artificial intelligence and provided the big data, while many works are generated independently by the artificial intelligence continuously iterating, and the artificial intelligence should also enjoy the main or full copyright according to its contribution. It is analogous to a mother giving birth to a child and providing the child with drawing books for learning and necessary equipment such as brushes and canvases, but the child's creative drawings are created independently and autonomously by himself, and the final copyright is still mostly or fully enjoyed by the minor child according to her contribution. If the child is not protected and is allowed to enter the public domain, the rights of the child and his or her guardian will be seriously infringed. As mentioned above, non-human objects' works do not belong to the owners according to the existing laws of most countries, only to enter the public domain, and there is no copyright over the works, and anyone can use the works free of charge. This will lead to a decrease in the motivation of the owners of the tragedy of the commons, non-human objects to invest in them and the emergence of counterfeiting, distortion and tampering, which is not conducive to the development of animal art innovation and the protection of the rights of investors in animal art works. In contrast, the mimetic legal subject system gives non-human objects the qualification in legislative technology, so that non-human objects can become copyright owners, and the owners of non-human objects, as their guardians, are logically given the qualification to maintain the rights of guardians, and at the same time, they are also legally and reasonably granted the property right of copyright, which is more conducive to the development of animal art business and artificial intelligence art creation. Therefore, it is said that the proposed legal

subject system is necessary, which solves the contradictory problem that artificial intelligence cannot take responsibility independently, even if the guardian system is established or the natural or legal person behind artificial intelligence takes responsibility, but it solves the problem of the tragedy of the commons and protects the public interest, so it is necessary. In addition, whether the artificial intelligence generation should be protected is still full of controversy, for the artificial intelligence investors and enterprises, the protection of artificial intelligence generation is in a gray area, the court decision is also wavering because of the lack of law and academic controversy, the willingness to invest will also decline, and the development of artificial intelligence will be hindered, while the guardianship system clears the legal obstacles to the development of artificial intelligence, with a logical and self-consistent legal system The guardianship system clears the legal barriers to the development of artificial intelligence and protects the property rights of artificial intelligence with a logical and self-contained legal system, which can strengthen the confidence of the industry and help accelerate the development of artificial intelligence for the benefit of humanity.

3. Introduction to the Quasi-Guardian System

3.1. The Evolution of a New Type of Copyrights

The history of the legal personality theory shows that the expansion of the legal qualification of artificial intelligence is possible. Personality in Roman law has been distinguished from biological persons, which is deemed as a product of judicial means. It constructed unequal legal personality among biological persons through factors such as gender, nationality, blood, and property. For such a long time, the personhood of slaves, women, Indians, and blacks was not recognized. It was not until the French Civil Code in 1804 that all natural persons gained the same legal personality. The German Civil Code formulated at the end of the 19th century was influenced by Savigny's theory of legal relations and further abstracted the concepts of capacity of rights and capacity to act, successfully establishing the modern legal personality system. The change of legal personality theory proves the feasibility of the expansion of legal subject qualification. Yang Xuzhi believes that the "expansion theory of legal personality" misunderstands the institutional history and connotation of legal personality because legal personality is always human-centered, consequently it is difficult for non-human artificial intelligence to constitute legal subjects (Han, 2019). In fact, we cannot define "human being" from the present historical perspective; in the past, "legal human being" did not include biological human beings such as slaves and women, so perhaps from the future perspective, "electronic person" also belongs to a kind of "legal person", and artificial intelligence also naturally becomes a part of the legal subject. The "work-centeredness" rather than "author-centeredness" of copyright should be adopted, and all who can create works should be given subjects. If they are not biological persons, we should give them judicial subjects by the judicial means, so that the subjects of creation are no

longer limited to biological persons.

Some scholars argue, based on Luhmann's theory of the differentiation of social functions, that the artificial intelligence revolution will lead to the continued evolution of legal personality (Yu, 2017). The economics of law argues that the expansion of market size and the increase of information cost are the key factors for the real recognition of a new personality (Landers et al., 2005). Chen Yanjing believes that new rights "are a process of discovery, not a process of creation" (Chen, 2017). Habermas directly regards rights as "a relationship, a social practice" (Habermas & Tong, 2003). A new kind of rights generation is the process in which the rights claims formed in social relations gradually produce positive social effects and are recognized by public reason. Only when artificial intelligence is capable of meaningfully communicating with human beings, participates in human common life, forms new social relations, and is supported by social public reason, does the subjective claims of artificial intelligence have the possibility of realization. The expansion of the market scale of artificial intelligence and the increase of the cost of artificial intelligence creation provide the impetus for the establishment of the legal subject qualification of artificial intelligence, and the technological revolution of artificial intelligence will continue the evolution of legal rights and legal subjects. Habermas, on the other hand, provides a new type of right construction process, from artificial narrow intelligence to artificial general intelligence requires a process of social public rational recognition, and the establishment of legal subject qualification of artificial intelligence cannot be achieved overnight. Now the artificial narrow intelligence may not be able to form a new type of social relations, but some disputes and protection problems of the artificial intelligence-generated objects now have already appeared, while in the foreseeable future, strong artificial intelligence will make social relations a reality, so it is necessary to give the artificial intelligence a quasi-legal subject qualification in the current weak artificial intelligence stage by the legislative technology.

3.2. Specific Design of the Quasi-Guardian System

In the case of copyright failure, it is advisable to return to the civil law system to define the nature of artificial intelligence-generated works.

For the identification of artificial narrow intelligence aids: Analogous to human embryos, they are identified with the qualification of quasi legal subjects only when they develop autonomy. Analogous to the case of human creation using animals as tools, as long as the conditions of works under copyright law are met, works generated by humans using artificial narrow intelligence as auxiliary tools should be protected by law, because this type of artificial intelligence is only an object relative to humans.

For the identification of artificial narrow intelligence with autonomy and animals: artificial narrow intelligence is like a minor who has the potential to develop into a fully civilized person, and animals are like mentally ill people who

are unlikely to acquire the capacity to act. The quasi-guardian system grants such artificial intelligence with the qualification of a quasi-legal subject and the judicial capacity for copyrights, and appoints guardians for the artificial intelligence. If the commissioned work represents the will of a legal person, the legal person shall be the ex-officio quasi-guardian and beneficiary of the artificial intelligence; if the designers develop it independently, the designers shall jointly serve as the ex-officio quasi-guardian and beneficiary of the artificial intelligence. When the number of designers is greater than three, the quasi-guardian of the artificial intelligence shall be elected by the designers based on weighted voting of their contributions. If the hardware owner and the designer of the artificial intelligence are separated, the quasi-guardian of the artificial intelligence should be attributed to the hardware owner with reference to the adoption system. The user of artificial intelligence is a pseudo-concept. There is no user for artificial intelligence with a high degree of independent and autonomous consciousness, and those with a user are artificial intelligence auxiliary tools. The ex-officio quasi-guardian of artificial intelligence can appoint the quasi-guardian through a will. If there is a dispute over the determination of the quasi-guardian of the artificial intelligence, the Intellectual Property Office where the artificial intelligence hardware is located shall appoint the guardian. If the parties concerned are not satisfied with the appointment, they may apply to the intellectual property court for the appointment of a quasi-guardian. The parties concerned may also apply directly to the people's court for the appointment of a guardian. Intellectual Property Office or intellectual property court shall appoint a guardian in accordance with the principles most favorable to the artificial intelligence among those who are eligible for quasi-guardianship according to law. If there is no person qualified by law to act as quasi-guardian, the quasi-guardian shall be the Intellectual Property Office. The duties of the quasi-guardian include protecting the copyright of the artificial intelligence and acting for the artificial intelligence to carry out civil legal actions, such as suing the infringer to make it compensate for damages and stop infringement. The copyright of artificial intelligence does not need to be registered, i.e., the creation is considered a factual act and the creation is copyrighted when created.

The scope of artificial intelligence copyright rights is not exactly the same as that of young children and mentally ill persons, especially reflected in the distribution of property proceeds of artificial intelligence-generated objects. The personal rights of a work are meaningful for animals or artificial intelligence, but the property of the human world is not meaningful for artificial intelligence. It is argued by scholars that artificial intelligence will require more electrical energy, replicate more backups, or even acquire higher arithmetic power in order to obtain more energy by consuming less energy, and the property of animals can be understood as animal welfare according to animal protection organizations. Consequently, the quasi-guardian system deems that the proceeds of artificial intelligence-generated works should be prioritized to maintain artificial intelli-

gence's survival such as electricity, maintenance fees. The guardian has the right to dispose of the profits of the artificial intelligence, i.e., all acts are done to protect the interests of the artificial intelligence by default, which is different from the natural person's rule that "the property of the ward shall not be handled except for the benefit of the ward". Besides, the guardian may have both the right of guardianship and the joint copyright according to the creative contribution.

An artificial general intelligence is similar to a human being who has reached the age of 16 and has fully acquired civil capacity and has the same copyright subject status as a human being. It has the ability to exercise rights, fulfill obligations and assume responsibilities. According to the theories of computer scientists, artificial general intelligence is likely to exist in the world only for a short period of time, and then it will soon develop into artificial super intelligence by self-iteration and rapid learning which are several times more intelligent than human beings. This article does not intend to discuss the laws in the era of artificial super intelligence, because by then the laws regulating human beings will probably be formulated by artificial intelligence, and human beings will become "non-artificial intelligence beings" together with animals. It is worth mentioning that in order to expect the artificial super intelligence to be "civilized and equal" to human beings in the artificial super intelligence era, human legislation should also show the "civilized and equal" aspect of human beings with animals and artificial narrow intelligence in the first place.

It is also known that artificial intelligence, if properly kept, may live forever, and the life span of many animals is much longer than that of human beings, so it is not appropriate to refer to the copyright protection period of human beings. This paper suggests that the term of protection of copyright of non-human objects should be limited to the lifetime of the artificial intelligence and fifty years after its death, while the maximum term of protection should not exceed one hundred years from the date of creation.

3.3. Significance and Shortcomings of the Quasi-Guardian System

The quasi-guardian system has many advantages over other doctrines, mainly including the following points.

1) The quasi-guardian system protects "unowned intellectual property" from being taken advantage of, avoids the tragedy of the commons, maintains the sustainability of intellectual property protection, and is in line with the logic of the legal system in terms of legislative technology, so as to better stimulate active innovation and industrial development.

2) The quasi-guardian system not only solves the problem of artificial intelligence, but also other non-human objects like animals.

3) The quasi-guardian system is to view the future development of artificial intelligence with an open vision of development, highlighting the progressive concept of equality of all beings, broadening the scope of legal subject qualifications, and unifying the legal system models of artificial narrow intelligence and

artificial general intelligence. The quasi-guardian system and the legal person theory are the difference between materialistic dialectics and metaphysics, and the quasi-guardian system views the historical stages of the legal subject of artificial intelligence with the view of universal connection and developmental changes.

4) By analogy with the bifurcated system of capacity for rights and capacity to act of children, it is perfectly compatible with the existing legal framework and achieves the clarification of the subject and rights of artificial intelligence intellectual property by means of the legislative technology. At the same time, the quasi-guardian system is not a comprehensive reaction to anthropocentrism. On the contrary, the quasi-guardian system achieves the effect of maintaining anthropocentrism by adapting anthropocentrism to technological development.

However, the quasi-guardian system also has its shortcomings. For example, the unique system in the quasi-guardianship may differ significantly from other provisions, causing a degree of disruption to the legal system and creating potential risks. At the same time, the quasi-guardian system is built on an idealistic legislative stance, which is more radical compared to the development of modern technology. In addition, although quasi-guardian solves many problems of artificial intelligence-generated works, it is not concise or efficient. Finally, the proliferation of artificial intelligence-generated works will likely lead to the tragedy of the anti-commons, and the details of the limits of protection for non-human works will be needed to be refined in the future.

4. Conclusion

This paper argues that artificial intelligence-generated works have originality in the sense of copyright law and should be protected by copyright law, and free will and self-awareness are not necessary conditions for legal subjects. As for the creative works of artificial intelligence generators with autonomy, the designer at present has no copyright and the relevant works can only enter the public domain. To solve the problem, this paper proposes a quasi-guardian system by analogy with the civil rights capacity system, and grants the autonomous artificial narrow intelligence that currently lacks the capacity to act the capacity for copyrights. The system successfully unifies the legal issues of copyright of artificial narrow intelligence and artificial general intelligence, artificial intelligence and animals, and provides a forward-looking perspective for artificial intelligence legal disputes.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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