

# ***Intellectual Property Protection of Virtual IP in the Age of Digital Economy and Its Jurisprudence Discussion***

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**Abstract:** This thesis aims to explore the intellectual property protection of virtual IP in the era of the digital economy and its jurisprudential discussion. With the continuous development of science and technology and the rise of the digital economy, virtual IP (virtual image and digital person) presents diverse connotations and expressions as an essential part of the digital economy. However, the intellectual property protection of virtual IP faces many dilemmas and challenges. This paper conducts an in-depth study on the protection of virtual IP through the legal perspective and puts forward some methods and strategies to crack the dilemma of virtual IP legal rights and interests. By improving the legal framework, clarifying the definition standard of virtual IP, and determining the scope of protected rights and interests of virtual IP, the legal protection of virtual IP can be effectively enhanced, and the legitimacy and stability of the property rights and interests of virtual IP can be maintained. This study has important theoretical and practical significance for promoting the development of the digital economy and protecting the intellectual property rights of virtual IP.

**Keywords:** digital economy, intellectual property protection, virtual IP, virtual images

## **1. Introduction**

In an increasingly interconnected digital world, inventions driven by cutting-edge technologies highlight the increasingly important role of intellectual property in the global economy. With the rapid development of the digital economy, keywords such as artificial intelligence, blockchain, cloud computing, big data, and meta-universe have come into the public's view more and more frequently in recent years. This means that the digital economy and the cutting-edge technologies it has spawned are changing how people live and produce. The digital economy is becoming increasingly closely integrated with people's daily lives. Among them, virtual images and virtual digital people are an essential part of the future development of the digital economy [1].

First, regarding national and industry policies, the National Strategic Emerging Industries Development Plan for the 13th Five-Year Plan issued by the State Council emphasizes that China should strengthen the over-the-top layout of strategic cutting-edge technologies, including virtual reality technology. In terms of legislative trends, the State Council's Opinions on Accelerating the Construction of a Strong Intellectual Property Rights State under New Circumstances and the Law on the Promotion of Cultural Industries (Draft for Comment) call for stricter intellectual property rights protection, strengthening intellectual property rights protection for innovations in new

industries and new fields and fostering the requirements of new initiatives. Secondly, regarding industry development needs, China has used various innovative business models in several industry sectors, such as education, entertainment, services, and manufacturing. Data show that the scale of China's digital economy grew from 27 trillion yuan to more than 45 trillion yuan from 2017 to 2021, firmly ranking second in the world and accounting for 39.8% of GDP. By 2025, the scale of China's digital economy is expected to exceed 80 trillion yuan, and by 2030, it is expected to exceed 100 trillion yuan, showing broad prospects for development. Such an ample market development space and the demand for interest that more and more companies in this field in the story, and the resulting virtual intellectual property infringement disputes in the number of cases also gradually increased. For example, the subject copyright infringement dispute between Panorama Guest Company and Tongchuang Lantian Company, the issue of copyright infringement dispute between Huacai Light and Shadow Company and Time Fantasy Company, as well as the case of copyright infringement dispute between Magic Enamel Company and a virtual digital person of a network company in Hangzhou, which, to a certain extent, reflects that intellectual property rights disputes have already arisen in our country between the fields of virtual reality and virtual reality and between the areas of virtual reality and natural space.

How to establish a digital intellectual property protection system that meets China's national conditions, incentivizes and protects a new round of innovation and intellectual property rights, and promotes a more extensive and more robust digital economy has become a crucial issue. "Digital technology and intellectual property rights are integrated and symbiotic, escorting each other." Xiao Jing, Chief Scientist of Ping An Group, said that intellectual property is the carrier of scientific and technological innovation and an essential guarantee of the benefits of scientific and technological innovation. The growth of the new virtual reality industry must rely on developing a complete ecosystem in which the protection of the intellectual property system is indispensable [2]. Nowadays, the development of science and technology is constantly changing our lives, work, socializing, and so on are becoming more and more virtualized; how to maintain the economic order of the virtual world is a critical topic.

## **2. Connotation and Performance of Virtual IP**

### **2.1. Virtual Image Definition and Characterization**

A virtual image is an entity with a unique identity and image generated through virtual technology. Its characteristics include: 1. Virtuality: virtual image is not actual but generated based on algorithms, computational models, or other computer brain technology; 2. Diversity: Virtual images can be designed by the designer with different appearances, personalities, abilities, and other characteristics, with rich, personalized performance; 3. Interactivity: Virtual images can be interacted with and exchanged with the user in real-time, and in the virtual world, have a certain degree of Autonomy and feedback ability; 4. Plasticity: The virtual image can be customized and changed according to the user's needs and preferences. The generation of virtual images needs to rely on advanced computer graphics technology and artificial intelligence algorithms through the simulation and reconstruction of human appearance, posture, language, emotion, and other information so that the virtual image has a similar appearance and behavioral performance to real humans. Virtual image has many application areas, including virtual games, social networks, virtual reality, etc. Through virtual photos, users can play different roles in the virtual world, experience different environments and interactions with the real world, and satisfy their personalized and creative needs. At the same time, virtual images play an essential role in the commercial field and can be used for brand promotion, product display and sales, customer service, and other aspects.

## 2.2. Types of Intellectual Property for Virtual IP

The virtual IP intellectual property rights types include copyrights, trademarks, and patents. First, the creative works of virtual IP can enjoy copyright protection. For example, the design drawings of a virtual image and the musical works of a virtual digital person are original works, and their creators should enjoy copyright over their careers. Copyright protection enables creators to control the rights to reproduce, distribute, display, and interpret their results and enjoy the right to receive the economic benefits of their careers.

Second, virtual IPs may also have trademark protection. In the era of the digital economy, numerous virtual images and virtual digital persons have developed unique logos and brand values that can be protected by applying for trademark registration. Trademark protection enables virtual IP to gain recognition and competitive advantage in the marketplace, preventing others from using similar logos without permission to confuse and mislead.

In addition, virtual IPs may involve technological innovations that can be protected by patents to safeguard the technical substance of the virtual IP. Patent protection enables the exclusive enjoyment of the innovative technology of the virtual IP, preventing others from using the same or similar technical implementations without a license for a certain period.

In summary, there are various types of intellectual property rights for virtual IP, and different virtual IPs can enjoy different types of intellectual property protection. Protecting copyrights, trademarks, and patents provides legal security and convenience for the creators and users of virtual IPs and promotes the creation and innovation of virtual IPs.

## 2.3. Definition and Characteristics of a Virtual Digital Person

A digital person is a virtual entity with independent personality and behavioral capabilities generated through digital technology. Its features include: 1. Personality: a virtual digital person has independent thinking, emotional, and behavioral characteristics and can show similar cognitive and emotional abilities to real humans; 2. Contextual adaptability: a virtual digital person can make independent decisions and behavioral performance according to different contexts and tasks; 3. Learning ability: The virtual digital person can accumulate knowledge and enhance his ability through machine learning and deep learning technologies; 4. Multimodal interaction: The virtual digital person can interact and communicate with the user through voice, image, gesture, and other modes. The definition and characterization of virtual digital people make them essential to the digital economy era. In the digital economy, virtual digital people play a variety of roles, including virtual assistants, virtual shopping advisors, virtual social companions, and so on. The personalized features of virtual digital people enable them to meet users' needs better and enhance user experience. Its contextual adaptability allows it to personalize its services according to the user's preferences and conditions and provide information and advice that better meets their needs. The learning ability given to it by the computer algorithm enables it to improve its intelligence level through continuous accumulation and learning, thus better adapting to the user's needs and changing circumstances, changing the situation in which the virtual service could only give dull answers by the established procedures before. The multimodal interaction capability makes it easier for users to communicate and exchange with the virtual digital person, providing a richer interaction experience. However, the issue of intellectual property protection and legal rights and interests of virtual digital persons has also become more and more prominent. In the era of the digital economy, how to protect the intellectual property rights of virtual digital persons and safeguard their legal rights and interests through appropriate lawful means has become an urgent problem to be solved.

### 3. How to Legally Protect Their Intellectual Property Rights

Intellectual Property Rights (IPR) refers to the exclusive rights that people enjoy by the law about the fruits of their academic work, usually, the exclusive rights or exclusive rights granted by the state to the creators to enjoy the fruits of their academic labor for a certain period. In the era of the digital economy, intellectual property protection of virtual IP faces many new challenges and has a different complexity than before. Intellectual property protection is a comprehensive legal measure to protect people's creative labor and knowledge output from infringement and misappropriation. Virtual IP, as virtual images and virtual digital persons created and existing in the digital world, should also be subject to adequate intellectual property protection [3].

The overview of intellectual property protection mainly includes the legal basis of intellectual property, principles, and means of protection. The legal basis of intellectual property rights largely relies on relevant laws and regulations at home and abroad, including patent law, copyright law, trademark law, and anti-unfair competition law. These laws and regulations provide the legal basis and norms for protecting intellectual property.

The principles of intellectual property protection mainly include protecting the fruits of creators' labor, protecting fair competition, and encouraging innovation. Protecting the fruits of creators' work is the core purpose of intellectual property protection. Protecting the rights and interests of creators is conducive to promoting other creators to generate more innovative activities and further promote the progress and development of technology in related fields [4]. The protection of fair competition is to maintain the market's regular order and prevent unfair competition from causing the loss of rights and interests to creators and innovators.

Typical means of intellectual property protection include legal means, technical means, and self-regulatory constraints [5]. Legal means are the most common and essential means of intellectual property protection; by formulating and implementing the corresponding laws and regulations, infringement can be punished and stopped. Technical means mainly refer to safety through technological means, such as digital watermarking encryption technology [6]. On the other hand, self-regulation constraints refer to the self-regulatory organizations and norms of the industry to constrain practitioners' behavior and safeguard intellectual property rights and interests.

An in-depth understanding of the basic principles and regulations of intellectual property protection can provide guidance and a basis for the intellectual property protection of virtual IP. Only by fully understanding and applying the concepts and means of intellectual property protection can people better protect the intellectual property rights of virtual IP, safeguard the rights and interests of creators and innovators, and promote the development of the digital economy.

### 4. The Dilemma and Solution of Protecting the Legal Rights and Interests of Virtual IP

Limitations of Virtual Character Copyright Protection: Current Chinese legislation and judicial practice prove that China does not recognize virtual characters for independent protection, nor does it recognize that virtual characters can be protected separately as works [7]. This also means that if the virtual character is only a part of the work's composition, it does not belong to the copyright law protection object. This means that if a virtual character is only part of a work, it does not belong to the thing of protection under the copyright law, and the copyright law does not provide adequate protection.

Limitations of the protection of trademark rights for virtual characters: There are limitations in the scope of legal protection of trademark rights. Currently, the trademark law in China provides that the registered trademark object is mainly two-dimensional plane graphics or three-dimensional signs [8]. However, the recognizable characteristics of virtual images are not only visual. A character's voice or unique signature action can remind the public of the nature of the work in which the surface is

located, thus inducing consumers to pay for their favorite virtual image. Therefore, a trademark right only protects the visual appearance of a virtual character, but not the rights and interests of the virtual nature.

Limitations of the Protection of Virtual Characters Against Unfair Competition Law: Article 1 of the Anti-Unfair Competition Law clearly states that this law is set up to protect the legitimate interests of operators and consumers [8]. However, in most cases, the creators of virtual characters are not operators. The purpose of their creation may not be to utilize the derivatives of virtual characters to conduct commercial activities and profit from them. Therefore, it is difficult for the anti-unfair competition law to play its role in protecting the rights and interests of virtual characters.

To summarize, people can understand that the current legal system has not fully covered the unique characteristics of virtual IP and has not stipulated the scope of rights and interests of virtual IP, infringement, and other related issues. This leads to certain uncertainties in the legal protection of virtual IP, and creators and owners face difficulties and challenges in protecting the rights and interests of virtual IP. Therefore, existing laws must be revised and improved to ensure that virtual IPs receive adequate legal protection.

Solution: First, people can make improvements at the legislative level to clarify the legal status and scope of protection of virtual IP and provide a clear legal basis for protecting its intellectual property rights. It is necessary to formulate special laws and regulations for virtual IP, define the definition of virtual IP, define the scope of its rights and interests, and determine the legal responsibility to ensure that virtual IP can be fully protected by law [9]. In addition, the enforceability of the law and the dispute resolution mechanism should be strengthened to better deal with intellectual property disputes related to virtual IP. A specialized virtual IP intellectual property protection agency can be established to be responsible for registering, certifying, and investigating infringement of virtual IP and providing effective dispute resolution channels to help safeguard the legitimate rights and interests of virtual IP holders. In addition, international cooperation is also an essential means to improve the legal framework because the intellectual property protection of virtual IP is a global challenge, and collaboration and information sharing among countries can better meet this challenge. The international protection of intellectual property rights can be strengthened by enhancing international intellectual property exchanges and cooperation, jointly formulating standards and rules, and establishing a transnational cooperation mechanism to intensify the fight against cross-border virtual IP infringement [10,11]. At the same time, it is possible to actively participate in international organizations and multilateral agreements to promote the establishment of a globally unified mechanism for the protection of virtual IP intellectual property rights to build a more stable, transparent, and predictable intellectual property environment and promote the healthy development of the digital economy.

## 5. Conclusion

In this thesis, people conduct an in-depth study on the intellectual property protection of virtual IP and its jurisprudence in the digital economy era. First, people analyze the connotation and performance of virtual IP, which includes the definition and characteristics of virtual image and virtual digital person. A virtual image is usually a computer-generated virtual entity with its appearance, personality, and behavioral factors. Virtual digital people, on the other hand, are virtual entities with artificial intelligence technology that can interact with people and possess autonomous thinking abilities. Through in-depth research on virtual IP, people deeply realize that virtual IP has essential economic, social, and cultural values in the era of the digital economy. Secondly, people explore how to protect the intellectual property rights of virtual IP through law. In the overview of intellectual property protection, people analyze the concept of intellectual property, classification, and basic principles of legal protection. For virtual IP, people further break down its types of



intellectual property, including copyright, patent, and trademark. However, the security of virtual IP legal rights and interests faces some dilemmas. People analyze some copyright, trademark, and anti-unfair competition law difficulties for protecting virtual IP rights and interests. Given these dilemmas, people propose measures to break the puzzles in protecting virtual IP legal rights and interests. First, improving the legal framework is the basis for safeguarding virtual IP's legal rights and interests, including clarifying the law's scope of application, establishing a sound intellectual property registration system, and strengthening international cooperation. At the same time, people also look forward to the future direction of research, hoping to explore further the issues related to the protection of the legal rights and interests of virtual IP to provide theoretical support and practical guidance for promoting the healthy development of the digital economy.

However, this paper only analyzes the issue at the legal level. To promote the virtuous circle of digital economy development and intellectual property protection, it is not only necessary to conduct in-depth research at the legal and technical levels but also necessary to strengthen the cooperation between academia and industry to jointly explore the best practices of virtual IP intellectual property protection, to provide support and guarantee for the development in the era of digital economy. At the same time, attention should be paid to the balance between virtual IP intellectual property protection and privacy protection to avoid excessive infringement of personal privacy by intellectual property protection measures.

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