

Determination of the Status of Artificial Intelligence Subjects and the Construction of Tort Liability System

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Abstract:

The advent of the era of artificial intelligence poses challenges to human society and institutions. Artificial intelligence can be divided into weak artificial intelligence, strong artificial intelligence, and super artificial intelligence according to its degree of intelligence. Although advanced artificial intelligence has the ability to recognize and control, its legal subject status should not be recognized from the perspective of both legal subject theory and legal philosophy. In the case of not recognizing its subject status, the law should still be improved for the special characteristics of artificial intelligence. Although it is not known when the era of strong artificial intelligence will come, its technical inevitability is no longer controversial. Through the division of the tort liability of intelligent robots, determine the subject of responsibility, improve the establishment of an insurance system to protect the smooth development of artificial intelligence, and safeguard the interests of the tortfeasor, in order to improve the ability of the law to deal with the risks of artificial intelligence.

Keywords:

Artificial Intelligence, Intelligent Robot, Legal Subject, Tort Liability

1. Introduction

Artificial intelligence is a technology that enables robots to perform a certain task like humans. The emergence of artificial intelligence has changed the world and changed the way of human production and life. Although artificial intelligence does not have human intelligence, it can simulate human consciousness and thinking process and think like humans. With the advent of the era of artificial intelligence, this new thing, which is originally a purely technical issue, will have a great impact and influence on human society in terms of law, philosophy, and ethics, and may generate corresponding civil infringement.

2. The Problem

More than 70 years ago, three laws of robotics were proposed in science fiction: the first law: robots cannot harm humans, nor can they stand by and do nothing when they

see humans being harmed. The second law: robots should obey all orders from humans, but should not violate the first law. The third law: robots should protect their own safety, but must not violate the first and second laws. In Hollywood, science fiction movies, the advanced computer control system developed by humans goes out of control and the robots have self-will and start to slaughter humans. Since then, the issue of artificial intelligence has been in the spotlight, and there have been various voices of fear. Artificial intelligence is convenient for human beings but also contains huge risks, there may be out of control to cause damage to people, but now, such a tragedy really happened. At a Volkswagen plant in Germany, a worker was working with a colleague to install a robot when it suddenly grabbed him by the chest and pushed him hard against a metal plate, causing the worker to die from his injuries. In February 2007, in a robot-themed restaurant in Kuala Lumpur, Malaysia, the frying robot fried the shrimp, and when the owner couple went to check, the robot suddenly slapped the owner, which was later found to be disturbed by high-frequency electromagnetic waves near the kitchen before it missed.[1] In November 2016, at the venue of the 18th China International Hi-Tech Fair in Shenzhen, a robot named "Little Fat" suddenly broke the glass of the exhibition site independently and injured passers-by, becoming the first case of intelligent robots injuring people in China.[2] On the night of March 2018, a 49-year-old woman was struck and killed by a self-driving car in its testing phase while crossing the street in Arizona, USA.[3]

Who is criminally liable for the murder of a smart robot? Whose fault is it that an automatically operating intelligent robot loses control and damages a third party? Who is responsible for the tort of traffic accidents involving driverless cars? The wheel of technological progress is unstoppable, but how to solve the risks and legal issues brought by artificial intelligence will become the key to affecting whether it can develop benignly.

3. The Legal Subject Status of Intelligent Robots

3.1. Current Theory in Academia [4]

3.1.1. Object Theory

The view that intelligent robots are objects of legal relationships and do not have the status of legal subjects is the main view of the object theory. It is mainly divided into the tool theory, the software agent theory, and the lack of moral capacity theory.

a. Tools Doctrine

It is said that intelligent robots are essential tools, created by people for the purpose of serving humans, and they cannot be called subjects of legal relations. In legal issues involving artificial intelligence, the principle of the imputation of product liability and the principle of no-fault liability that considers intelligent robots as children or animals of users can be applied to the issue of damage caused by them to people or things. In other words, in the field of intelligent robots, the subjects involved in pursuing liability include all subjects involved in the generation, design, and use of intelligent robots.

b. Software Agent Doctrine

This view is that intelligent robots are software agents and do not have the status of legal subjects, but only play the intermediate function of transmitting the information. However, I think the limitation of this view is that it is for robots with weak artificial

intelligence, i.e., they are only good at a single field of technology or operation, such as only playing Go and knowing nothing about other fields. artificial intelligence or super-artificial intelligence with ponderous algorithms.

c. The Doctrine of Lack of Moral Competence

The reason for this doctrine that intelligent robots are legal objects is that it is believed that only people with moral cognitive ability have the status of legal subjects. Although some people believe that “a moral subject is necessarily a legal subject, but a legal subject may not be a moral subject”, I believe that intelligent robots are created and designed by human beings, and the algorithms related to moral ability and legal cognition are ultimately designed and implanted by human beings, no matter how independent the behavior of intelligent robots is and how deep the analysis of data is. No matter how independent the behavior of an intelligent robot or how deep the analysis of data is, it is based on the initial implantation of the designer, and the ultimate development is still the direction of the creator's will. If users or creators use them to commit criminal acts, intelligent robots will become advanced tools for human crimes, so from the perspective of responsibility, I prefer not to consider intelligent robots as legal subjects.

3.1.2. Subject Theory

a. Agent Doctrine

The doctrine holds that the intelligent robot is in the position of an agent, and the agent is the subject person in the legal relationship, i.e., the intelligent robot has the status of a legal subject. The user of the intelligent robot and the intelligent robot is the relationship between the principal and the agent in the legal agency relationship. It is given civil rights and civil obligations in law.

b. Electronic Personality Doctrine

The doctrine supports that intelligent robots have the status of “electronic person”, that is to say, intelligent robots have a legal personality in the electronic personality. The author believes that the premise of having an electronic personality is that the robot should be able to bear the liability for damages that is appropriate to the nature of its behavior, similar to a legal person with his own property. But the current development, so that intelligent robots are completely free from human control, own their property, and take responsibility for their legal actions, is unrealistic.

c. Limited Personality Doctrine

This doctrine is based on the determination that intelligent robots do not have the status and ability to assume full responsibility, and that they have “limited” personalities.

d. Personality Mimetic Doctrine

This doctrine believes that the legal personality of the intelligent robot should be given the same as that of the fetus through legal mimesis. However, the author believes that the legal personality of the fetus is a purely beneficial legal personality, and from the perspective of real life, the actual beneficiary of the benefit is the mother, and the mother cannot use the fetus to perform other legal acts, but if the legal personality of the intelligent robot is purely beneficial, the actual beneficiary is the user of the robot, and the robot can use the robot to perform other legal acts. It will

lead to the expansion of the rights of the users of intelligent robots and disrupt the social order.

3.2. Analysis of the Status of Legal Subjects of Intelligent Robots

Although at present, intelligent robots are still in the era of weak artificial intelligence, the era of strong artificial intelligence and super artificial intelligence is not far away. The spirit is bound to come after the development of technology to a certain extent, and if the technology develops more intelligently, he will be called a better carrier of the spirit like the brain in general. [5] There is a consensus that weak AI cannot be the subject of law because it is still in the status of a human tool, but strong AI and super AI with "autonomous consciousness" can no longer stay in the status of "tool", and can even become a new species comparable to humans. However, strong AI and super AI with "autonomous consciousness" can no longer stay as "tool", but even become new species comparable to human beings, and even more intelligent than human brains.

At present, legal subjects can be divided into two types: first, living beings based on life acquire the status of legal subjects from the beginning of life; second, inanimate entities become legal subjects through the legal mimetic route. The key to both becoming legal subjects is the criterion for judging whether intelligent robots may become legal subjects. First, the basis of biological persons as subjects of law is examined from a historical perspective. Tracing back to Roman law, the determination of personality was used to distinguish biological persons into free people and slaves, and free citizens had personality while slaves had no personality. Therefore, biological persons with legal personality could be recognized as subjects of law, and the relationship between personality and subjects of law was determined. Subsequently, under the influence of European humanist thinking, the close connection between personality and the ethical nature of human beings began to emerge. The values of "freedom", "equality", and "human rights" became the criteria by which people analyzed and judged the law. Since then, biological human beings have the same ethical nature and equal human rights and are no longer distinguished by their status. Biological human beings are equal subjects of law by virtue of their lives from the beginning. Thus, from a historical point of view, human beings are treated as subjects of law because they have equal personalities in the ethical sense. Second, why can specific non-living entities, such as companies, social organizations, and other units, be proposed as legal subjects? It can be seen through the provisions of the law on the unit that although the unit has an independent will, it is ultimately the sum of the will of living beings within the unit; although the unit has an independent attribution of interests, it is undeniable that it is essentially the interests of the shareholders of the unit, and whether they are shareholders of legal persons or natural persons, the ultimate representative is always a living being. Although the unit has the ability to bear independent criminal responsibility in criminal law, regardless of whether it is a double penalty system or a single penalty system, the directly responsible persons and the main responsible persons of the unit are subject to certain criminal responsibility when the unit commits a crime. It can be seen that a unit can be proposed as a legal subject precisely because it is ultimately based on a biological person with an ethical personality. With the development of society, the subject of legal mimesis emerges independently of biological persons with life, and the basis for mimesis of an entity as a subject of law is that the entity is always based on or composed of and controlled by biological persons with ethical personality.

Intelligent robots were originally invented by human beings in pursuit of a better life, but if super artificial intelligence is based on life science and has the same or higher perception and thinking than human beings by stimulating the neural network of the human brain, then intelligent robots may become the last invention of human beings. According to the principle of survival by nature, humans will no longer occupy a dominant position, but more advanced intelligent robots will dominate the world, which will inevitably lead to challenges concerning the ethical system unique to human society. At that time, will intelligent robots still apply the human legal system? When intelligent robots have the ability to challenge human rights ethics, human beings should discuss more how to save themselves, evolve, transcend, and control under the development trend of human-robot interaction to solve the existential crisis, rather than the status of intelligent robots in the human legal system. Without departing from the original purpose of inventing AI, strong AI and super AI should not only not have human ethical personalities, but also should use various institutional rules to control the formation of their ethical personality. Unless intelligent robots can reproduce themselves or intermarry with humans, the legal purpose of the law presupposes the regulation of human legal behavior, and regardless of the imputation and penalties imposed on intelligent robots, they must ultimately be traced back to the people who developed, designed, or used them. [6]

4. The Construction of Tort Liability System for Intelligent Robots

4.1. Product Liability for Intelligent Robots

The Civil Code of the People's Republic of China Tort Liability Chapter IV product liability provisions, due to defects in the product caused by others, the producer shall bear the tort liability. According to the provisions of this article, as long as there are defects in the product caused by other people's damage, in addition to the legal can reduce or exempt from liability, regardless of whether the producer of defective products subjective fault, shall bear the tort liability. The producer is a no-fault liability, and the seller and the producer assume unreal joint liability. Here the identification of defects in the core of product liability, "defects" in academic and comparative law can usually be divided into three types: design defects, manufacturing defects, and warning defects. [7]

4.1.1. Producer Liability for Intelligent Robots Should Not Include Design Defects

For highly sophisticated and complex products like intelligent robots, the producer itself cannot independently design all the parts of the construction of that robot, so the core technical design of intelligent robots is derived from upstream designers. However, according to China's existing product liability regulations, even if the robot's defects originate from upstream subjects, the subject directly liable to the victim for the product is generally the final producer, not the upstream designer.

After intelligent robots enter the circulation field, although they are essential products, they have certain special characteristics compared with general products. Intelligent robots have the ability of independent learning and independent transformation, and the root of their ability lies in the design of the designer, which is not related to the manufacture of the producer, and most of the infringement of intelligent robots is in the design procedure that goes wrong, so their design defect liability should be removed from the producer's liability alone, and the designer

should bear directly to the victim, unless the producer and the designer of the intelligent robot are the same people.

4.1.2 The Seller and The Producer of the Intelligent Robot Are Unreal Joint Liability

Consumers are in a vulnerable position compared with producers and sellers due to information asymmetry, especially the development of modern technology makes it more difficult for consumers to judge the goods. The distinction between producer liability and designer liability does not weaken the protection of the law for consumers or victims, but narrowing the liability of sellers will directly reduce the protection of the law for victims. In addition, the reason for the seller's liability is the necessary way to cause damage by the sales act, and intelligent robot products with design defects, like products with other defects, must go through the sales activities of the seller to have the possibility of causing product liability. [8] In summary, the seller should still assume joint and several liabilities with the producer or designer, but not due to the seller's fault caused by product defects, the seller can recover from the producer or designer after assuming liability for the victim.

4.2. Designer Responsibility for Intelligent Robots

4.2.1. Determination of the Designer's Scope

Not every designer of a design should be directly liable to the victim for design defects, and the designer's liability for design defects in smart robots should be limited to the developer of the core smart technology of the smart robot. For example, the designer of a floor-sweeping robot should only be liable for the design of the automatic cleaning system, while other design defects of the floor-sweeping robot, such as scratching the floor by the housing design, should still be borne by the manufacturer. Therefore, other design defects not related to the core design of the intelligent robot should still be applied to the provisions of the current law, the producer to bear product liability. In addition, designers who make changes to the core design of an intelligent robot, including authorized designers or unauthorized design modifiers, should be subject to the designer's liability for intelligent robots.

4.2.2. Principles of Attribution of Designer's Liability

The principle of no-fault liability should be applied to the designers of intelligent robots, so as to ensure effective compensation for the victims and to urge the developers and designers of artificial intelligence to take a more cautious attitude toward the development of technology to meet the interests of society. No-fault liability prevents the wild growth of technology, but does not inhibit the development of technology, but rather guides the benign growth of science and technology and maintains the stability of society, ultimately promoting the progress of technology and the transformation of results.

The exemptions provided in the *Product Quality Law of the People's Republic of China* should also apply to the responsibility of the designer of intelligent robots. First, the phrase "not put the product into circulation" should be amended to "not put the product into testing or circulation". As a result, the threat of infringement to the public during testing is no less than that posed by robotic products already in circulation, as in the case of the driverless smart car that struck and killed people during the testing phase presented at the beginning of this paper. Secondly, analogous to the first rule,

“in the product into the test or circulation, caused by the defect does not exist”, the product into the test or circulation when the defect does not exist, indicating that the design defect and the designer have no relationship, the designer should not be responsible for the actions of third parties. However, the third rule “put the product into circulation, the level of science and technology cannot yet find the existence of defects” cannot be applied to the designer's liability, otherwise, on behalf of the most advanced level of science and technology of intelligent robot infringement will be mostly exempt from liability. [9]

4.3. User Responsibility for Intelligent Robots

Users of intelligent robots should be liable for damages caused by their fault in accordance with existing tort law. Their fault can be divided into the following aspects: first, instruction fault, where the user gives improper instructions to the intelligent robot, causing its behavior to deviate from the intended track or causing chaos in the core system, resulting in artificial intelligence tort; second, maintenance fault, where the user with maintenance obligations fails to perform the necessary maintenance on the intelligent robot as required or actively damages the robot resulting in its tort; third, intervention fault, where the intelligent robots may cause serious damage due to the machine itself when the risk is triggered by non-human circumstances, and there is no proper human intervention when the user is able to manually control the situation.

4.4. Establishing an Intelligent Robot Insurance System

4.4.1. Compulsory Liability Insurance

The clarification of the tort liability of intelligent robots will inevitably lead to changes in the insurance system, similar to China's first compulsory insurance system stipulated by national law, *the Regulations on Compulsory Insurance for Motor Vehicle Traffic Accident Liability*, and Article 9 of *China's Road Management Code for Intelligent Networked Vehicles (for trial implementation)* also stipulate that each vehicle should be equipped with a compulsory traffic accident liability insurance certificate of not less than five million RMB, and in the field of intelligent robots should also Establish a compulsory liability insurance system. The compulsory liability insurance system can strengthen the compensation ability of designers and users. The tort liability caused by the core design defects of intelligent robots and the improper use of users will become the most important cause of tort of intelligent robots in the future, and the designer bears no-fault liability, as long as the damage caused by the design defects, regardless of whether the designer is at fault or not, it will have to bear the liability, which greatly increases the burden of tort liability of the designer, and once the tort accident occurs, the liability for damages will be enormous and far exceed the ability of the designer and user to compensate. Therefore, compulsory liability insurance protects both the designer and the user and also benefits the victim.

4.4.2. Commercial Insurance and Product Liability Insurance

In addition to mandatory liability insurance, the use of commercial and product liability insurance should be put in place. In tort litigation against intelligent robots, where proof of matters such as product defects and causation can become increasingly difficult, the existing commercial and product liability insurance could be

appropriately modified in order to reduce operational risks in the intelligent robotics field, promote the development of the AI economy, and provide effective compensation to innocent victims. Commercial insurance is voluntary, but in order to promote the scale of the intelligent robotics industry and improve safety and security, mandatory commercial insurance can be implemented for intelligent robotics items used by companies. [10] The subject of product liability insurance is product liability, therefore, the designer, producer, and seller of the product should be the insured of this insurance, but because there is mandatory liability insurance as the basis, this insurance can be stipulated as a voluntary purchase, and in the case that the compensation amount of the mandatory insurance is not enough, the insurance is activated as a supplementary compensation to protect the interests of the infringed person.

5. Conclusions

Artificial intelligence technology is on the rise, and with it comes the question of the relationship between law and technology. The development of technology for a more developed society is often accompanied by risks. Technological risks can lead to legal pitfalls, and when these legal pitfalls are ignored, they can lead to a huge impact on the legal system. Therefore, when new technologies are first created, legal researchers should focus on anticipating the many legal problems that may be brought about by technological innovation, rather than limiting themselves to the immediate stage of technological development and rejecting the perspective of theoretical research results wholesale. Artificial intelligence, as a technology that can affect an era, should be examined legally from a developmental perspective. The subject qualification and tort liability of intelligent robots under artificial intelligence discussed in this paper is only an exploration under the premise of no legal system of artificial intelligence. The risks in the era of artificial intelligence cannot be dealt with by one sectoral law alone but should be linked with various sectoral laws to realize the legal systemic confrontation of risks.

Conflicts of Interest

The author declares that there is no conflict of interest regarding the publication of this article.

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