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2025 Volume 3, Issue 9
Lecture Notes in Education, Arts, Management and Social Science
ISSN(Online): 2705-053X

Preliminary Discussion on Fundamental Issues of Criminal Law in the Context of Artificial Intelligence

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Abstract: With the rise of artificial intelligence (AI) technology, its related technologies have been widely applied in daily life, bringing convenience while posing many new challenges to traditional legal systems. In recent years, the research on AI in the legal field has continued to heat up, with experts, scholars, and practitioners in various fields such as criminal law and civil law focusing on exploring controversial issues in their respective fields and achieving fruitful results. This article takes the relatively mature driverless car technology as a case study, from the perspective of criminal law, reviews academic research findings, and delves into the fundamental issues of criminal law related to AI, aiming to provide support for subsequent research in this field.

Keywords: Artificial intelligence; Criminal subject; Criminal legislation; Computer algorithm

Online publication: October 26, 2025

1. Introduction

Artificial intelligence has emerged as a popular research direction in recent years. The practical applications of technologies like ChatGPT and autonomous vehicles have significantly altered the lifestyles of the general public, while also challenging traditional perceptions. The practical issues and potential risks highlighted in their application processes have sparked the research interest of numerous scholars. The rise of artificial intelligence has not only reshaped the public's lifestyle patterns but also the underlying logical relationships, moral ethics, and social relations, which will inevitably trigger a new round of extensive discussions in social disciplines such as philosophy and law. Although artificial intelligence has not yet advanced to an advanced stage, conducting multidimensional research, including in the field of law, towards unknown future areas aligns with the development trend of the times and can provide important references for the benign development of artificial intelligence.

2. Current status and necessity of legal research on Artificial Intelligence

2.1. Current status of legal research on artificial intelligence

Artificial intelligence (AI) is the core driving force of a new round of scientific and technological revolution and industrial change. As an emerging technological science, AI is committed to the research and development of theories, methods,

technologies, and application systems for simulating, extending, and expanding human intelligence. The legal profession does not have natural advantages in AI research. AI originates from the revolution of information technology, and its core is data, algorithms and computing power. However, most law majors in colleges and universities have not carried out specialized teaching on information technology in the field of artificial intelligence for a long time, and the vast majority of scholars find it difficult to conduct in-depth research around the algorithm itself. They can only simply divide artificial intelligence into "weak artificial intelligence, strong artificial intelligence" or "low-level, intermediate, and high-level artificial intelligence." Although this classification has no substantive significance in legal research, it provides a basis for logical reasoning and cutting-edge research at the legal level and has a certain practical significance.

Some scholars are aware of the complexity of the field of artificial intelligence and the importance of algorithm research. They focus on algorithm-related research, and point out that the technical risks in the era of intelligence have brought challenges to the current legal system, such as the creation of an algorithm standard path, the renewal of the subject concept and the iteration of the accountability system [1]. Another scholar, based on the view of substantive criminal law, conducted substantive research on algorithmic crime, and believed that "the interpretation of criminal law on algorithmic crime needs to return to the interpretative level of constitutive elements supported by criminal law norms and algorithmic technical norms, and combine the ethical norms of algorithmic technology to explain the legality and rationality of criminalization from the perspective of substantive crime" [2]. These studies show that the exploration of artificial intelligence in the field of law is gradually deepening.

2.2. The necessity of legal research on Artificial Intelligence

2.2.1. The subversive distinction between artificial intelligence and human "perception" model: Taking driverless cars as the analysis sample

A driverless vehicle is an important application of artificial intelligence in the field of transportation. Its core is the automatic driving system, which essentially depends on data, algorithms and computing power. Compared with traditional cars, the most significant difference between the two is in the way of environmental perception and information collection: traditional cars are made up of human drivers who collect natural information through the five senses, transmit operation instructions after human brain analysis, and drivers need to undergo special training and experience accumulation to avoid risks; The driverless vehicle converts the natural environment into data information through the automatic driving system, and quickly calculates the vehicle speed, obstacle location, weather and road conditions, and then sends operation instructions to the vehicle.

Currently, driverless vehicles are still low-level artificial intelligence, but they are subversively different from human "perception". With the development of artificial intelligence to the advanced stage, its "perception" mode is more difficult to imagine. This difference leads to the natural unknown of artificial intelligence. Even for low-level artificial intelligence, it is difficult for researchers to fully control it, and sometimes it is difficult to troubleshoot the system. The emergence of advanced artificial intelligence in the future will pose a strong challenge to traditional law, so it is necessary to carry out relevant legal research.

2.2.2. The impact of AI on the theoretical foundation of traditional law

The update of science and technology in the field of artificial intelligence will inevitably lead to changes in the objective reality, breaking the theoretical basis of traditional law and compressing the imagination space of human thought. "Science is the solution and medium of risk" [3]. The technological progress of artificial intelligence brings convenience, but it also hides technical risks. Traditional law is the norm of human social phenomena; its evolution is consistent with the law of human social development, and integrates human philosophical thinking. Artificial intelligence is the summary and application of natural laws. Natural laws exist objectively, and human beings can only change their application conditions. This means that the legal application in the field of artificial intelligence must be based on the technology itself, which greatly compresses the space for human thoughts to play.

The birth of traditional law is inseparable from the theoretical support of philosophers and thinkers. For example, the principle of non-retroactivity of law, which is widely applied in modern criminal law, originates from relevant philosophical thoughts. However, the emergence of artificial intelligence challenges the traditional law increasingly with the progress of science and technology. In the future, high-level artificial intelligence with independent consciousness will be difficult to constrain by human thoughts and moral concepts. Even with the current low-level artificial intelligence, top technicians cannot completely solve all problems in the operation of the system. The logical thinking foundation of traditional legal dependence will be gradually broken, and it lacks of systematic philosophical and ethical foundation support related to artificial intelligence. Therefore, it is necessary to gradually promote research in combination with practical development.

3. Discussion on the feasibility of the research on the basic problems of artificial intelligence in criminal law

3.1. Artificial intelligence criminal law research has more flexibility

Compared with other department laws, the research of artificial intelligence in the field of criminal law can better play the role of traditional law, and the research method is more flexible. To study artificial intelligence in the field of tort liability, it is necessary to have a deep understanding of the algorithm to divide the responsibility. The process is complex and refined, and the scientific researchers have more natural advantages; The research of criminal law can temporarily avoid the problem of the algorithm. Even if researchers have only a little knowledge of the algorithm, they can also conduct a preliminary demonstration through scenario imagination, logical reasoning and traditional legal results.

Some scholars are opposed to carrying out the research on AI criminal law at this stage. They believe that the legal community has insufficient understanding of AI technology, and the research that is separated from the algorithm lacks practicality. In addition, it is uncertain whether there will be advanced AI in the future and whether the technical bottleneck can be broken. At this time, the research is still too early. However, in the past hundred years, the development speed of new science and technology has far exceeded that of legal research, and the law itself is lagging behind, which is often difficult to be matched synchronously. Even if the bottleneck of artificial intelligence technology may not be broken in the future, the discussion around potential scientific and technological problems at this stage can also explore the way for subsequent refined research, which is of forward-looking value.

3.2. Existing practical exploration on the integration of artificial intelligence and criminal law

Compared with the theoretical circle, the research in the practical circle is not macro, in-depth and comprehensive, but it is easier to find the legal problems in application. Taking the driverless vehicle as an example, its technology has made a major breakthrough and gradually popularized, and relevant practical cases continue to emerge. According to the CCTV news report on December 10, 2024: an online video shows that the traffic police stopped a “driverless” car during the routine inspection of drunk driving. The driver’s seat was empty and the passenger’s seat was drunk. After investigation, the driver could not drive because of drinking, so his friend set the car to automatic driving mode with his mobile phone. The legal problems caused by such cases are increasingly urgent for front-line investigators.

From the perspective of high standards, the practice circle should carry out practical research on the basis of theoretical research, and carry out gradual and in-depth research around data, algorithms and computational power, so as to conform to the standpoint of substantive criminal law. However, the rapid development of artificial intelligence and the emergence of real cases make it difficult for practitioners to have sufficient time and data for scientific research and judgment. Therefore, the targeted research on similar cases in the practice circle will help legal researchers better understand the operation mode of AI, clarify the research direction and accumulate practical cases, and promote the overall development of AI legal research.

4. The subject of criminal responsibility in artificial intelligence

4.1. Whether an artificial intelligence agent can be the subject of crime

The characterization of the criminal subject in the field of AI is one of the basic issues in the study of AI criminal law. At present, there are two kinds of views in the academic circles: support and opposition.

Proponents have demonstrated the legitimacy of AI as the subject of crime from different angles. Based on the theory of "independent consciousness," some scholars proposed that when AI develops to the degree of having independent consciousness and will and being able to make decisions independently, it should be recognized as an independent criminal subject. This kind of intelligent robot has formed human-like thinking and an independent personality. If the responsibility is still completely attributed to the manufacturer, it is not in line with the subjective will of the manufacturer, but also in violation of the theory of the four elements of criminal law. Other scholars put forward the "concept endowing theory," and believed that we can learn from the legal fiction experience of "unit" as the subject of criminal responsibility, and create a new subject of "artificial intelligence" under the existing legal framework. This path not only maintains the stability of the legal system but also responds to the needs of technological development through institutional innovation.

Opponents are cautious about AI becoming the subject of crime. Some scholars, starting from the system interpretation, believe that even if other department laws recognize the legal subject status of intelligent robots, the criminal law field should not easily recognize them, otherwise it will lead to chaos in the criminal responsibility system. More scholars pointed out from the perspective of philosophy and sociology that human unique autonomous consciousness, moral learning ability, and emotional experience are the essential characteristics that artificial intelligence finds difficult to really obtain. Other scholars cited the view that "behavior and life are intrinsically related," emphasizing that intelligent robots cannot enjoy the basic rights, such as the right to life and freedom, because they do not have the attribute of life. The existing types of penalties are difficult to produce practical effects on them, and giving them the qualification of criminal subject is lacking in practical significance.

The author believes that AI with autonomous consciousness and will control ability should be given the qualification of a criminal subject. First of all, the life forms are diverse. The law should pay attention to the functional essence rather than the formal characteristics. The AI with independent consciousness should obtain the legal status of an independent personality. Secondly, the legal system itself is historical and developmental. With the advent of the era of artificial intelligence, the legal concept and logical system should also evolve accordingly. Thirdly, the historical evolution of human moral emotion shows that the current human moral standards cannot be used as a reason to deny the criminal subject qualification of AI. Finally, compared with the fictitious subject of "unit," which has been recognized by the law, AI with stronger humanized characteristics should be included in the category of criminal subjects. As for whether its legal concept is equal to a natural person or whether it needs to create a new subject type, it can be left for further study.

4.2. Whether artificial intelligence-related parties can be the subject of criminal responsibility

There are different views on whether the AI-related parties can be the subject of criminal responsibility. It is argued that AI should be differentiated according to its development stage: in the low-level intelligence stage, AI has obvious properties as a tool, and its designers, manufacturers and users should bear corresponding criminal responsibility according to the specific circumstances; Once artificial intelligence develops into an agent with independent consciousness, it is inconsistent with the requirements of the constitutive requirements of the criminal law to investigate the responsibility of the relevant parties.

The author does not agree with the above view. Taking the driverless vehicle as an example, at the current stage of weak artificial intelligence, it is reasonable for relevant parties to bear criminal responsibility based on subjective intention or process degree. Even if it evolves into an AI with independent consciousness in the future, because the relevant parties have the possibility to foresee the technological development path and potential risks, it can not be completely exempted from criminal responsibility. From the perspective of legal principle, if artificial intelligence has a certain degree of autonomy and is completely exempted from the criminal responsibility of relevant parties, it may lead to increased risk of

technology abuse and even endanger the social public security order, so it is necessary to strictly regulate such situations.

However, when determining the criminal responsibility of AI-related parties, we must carefully define their imputation conditions and judgment standards. Taking the designers and users of driverless cars as an example, the designers need to meet the subjective elements of crime constitution, and the users also need to have subjective faults that reach the degree of crime. In the evaluation of criminal law, we should follow the "double strictness" standard, that is, strictly set the threshold of responsibility, not only to reserve reasonable space for technological development, but also to strictly control the possible systemic risks, so as to achieve the dynamic balance between technological innovation and legal constraints.

5. Criminal legislation of artificial intelligence

5.1. A special legal system should be established in the field of artificial intelligence

At present, China's AI legislation is in the pilot stage, showing the characteristics of "local" and "Scene." No special legislation has been issued at the national level, and the relevant norms are mainly local rules and regulations and administrative regulations of the State Council. This is in line with China's traditional legislative logic of "trial first and accumulate experience before special legislation", but there are "qualitative" differences between AI legislation and traditional legislation.

Artificial intelligence is the product of science and technology in the information age. It has the characteristics of virtualization across the whole field. Similar to e-commerce, it uses the network data platform to realize the real-time interaction between virtual and reality. Before the e-commerce law came into being, some scholars called for the establishment of special laws and legal systems. They believed that the unique activities and behaviors of e-commerce posed a comprehensive challenge to traditional laws, and special laws should be formulated according to their unique nature. Compared with e-commerce, the information technology used by AI is more advanced, and the challenges faced by traditional laws are more arduous. Therefore, AI legislation must establish a special legal system at the national level, rather than relying on local regulations and departmental regulations.

The author agrees with the view of establishing an artificial intelligence legal system at the national level. It is difficult for local regulations and departmental regulations to regulate AI from an overall perspective. The differences in regulations among provinces, autonomous regions and municipalities directly under the central government may lead to the complexity and confusion of regulations, and the problem of applying different standards in the same situation. Artificial intelligence-related problems need to be globally coordinated in order to be effectively solved.

5.2. Introducing the concept of information technology "algorithm" into criminal legislation

At this stage, AI technology is essentially a kind of computer technology. Accurately understanding the core differences between AI algorithms and systems and ordinary computer program operations is the key to grasping AI technology. At present, although it is in the stage of low-level artificial intelligence, the operation mode of artificial intelligence has taken shape, which is mainly reflected in two aspects: one is the application of hardware and infrastructure, such as driverless cars, sweeping robots, etc. The second is the coordinated operation of the algorithm and the system, involving image recognition, environmental simulation, speech recognition and other technologies. Through the integrated operation, it can save manpower and provide convenience for public life. A computer algorithm is a specific description of the computer calculation process. It defines how the computer converts input into output in a step-by-step manner. It is composed of specific steps, and each step has a fixed execution program. It is an objective existence that is not changed by human subjective will. The core reason for introducing the concept of an algorithm is that the steps of the algorithm are rigorous and precise. Only by studying and being familiar with the algorithm can we accurately determine the specific criminal legal issues.

6. Conclusion

Compared with traditional legal research, the legal research of artificial intelligence needs the support of more refined professional theoretical knowledge, which is very challenging. With the continuous development of artificial intelligence, the law circle must attach great importance to the research of artificial intelligence algorithms, and it is necessary to explore new legislative ideas and models under the existing legislative model. This will help to promote the formation of AI legal system, and is of great significance to regulate current and future AI activities. In short, we must maintain risk awareness, regulate AI activities through systematic legal regulation, and scientifically design AI legislation programs to ensure the healthy development of AI technology on the track of the rule of law.

Disclosure statement

The author declares no conflict of interest.

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