Уголовная ответственность поставщиков систем автономного вождения за дорожно-транспортные происшествия (часть I)

Criminal Liability of Autonomous Driving System Suppliers in Traffic Accidents (Part I)

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Аннотация. *В авариях с участием автономных транспортных средств задействованы водители, производители автомобилей, системы автономного вождения и поставщики. Вопрос о том, кто несет ответственность за серьезную аварию, становится очень сложным после ее возникновения. Поставщики должны изучить вопросы уголовной ответственности, как и разработчики, контролеры и конечные бенефициары системы. Естественно, физические лица обладают юридической правоспособностью для привлечения к уголовной ответственности за дорожно-транспортные происшествия, в то время как производители автомобилей, которые независимы от поставщиков систем, имеют в этом ограниченные обязательства из-за коммерческой тайны и технологий. Система автономного вождения оказывает значительное влияние на дорожно-транспортные происшествия, но из-за ограниченности ее свойств и технологического уровня возникают проблемы с привлечением к уголовной ответственности.*

В связи с высокой степенью специализации технических норм и их высокой степенью соответствия продуктам искусственного интеллекта необходимы технические нормы для определения обязанности поставщиков проявлять осторожность, когда субъективным аспектом преступления является халатность. Преступления, связанные с производством или продажей поддельных или некачественных продуктов, а также крупные дорожно-транспортные происшествия не могут вести к уголовной ответственности, и проблема привлечения к ответственности должна быть решена путем разъяснения или изменения существующих спецификаций или установления состава преступлений, связанных с разработкой и производством продуктов искусственного интеллекта, которые не соответствуют техническим нормам.

Ключевые слова: *автономное вождение, уголовная ответственность, дорожно-транспортное происшествие, технические нормы*

Abstract. *Autonomous vehicle accidents involve drivers, car manufacturers, autonomous driving systems, and suppliers. The question of who is responsible for a significant accident becomes a very complex issue after it occurs. Suppliers must study their criminal liability as developers, controllers, and ultimate beneficiaries of the system. Naturally, individuals have the legal capacity for criminal responsibility in traffic accidents, while car manufacturers, who are independent of the system suppliers, have limited attention obligations due to commercial secrets and technologies. The autonomous driving system has a significant impact on related traffic accidents but is limited by its qualities and technological level and does not have the legal capacity for criminal liability.*

Due to the high degree of specialization of technical norms and their high degree of fit to AI products, technical norms are needed to determine the suppliers' duty of care when the subjective aspect of the crime is negligence. The crime of producing or selling false or inferior products and major responsibility

accidents crimes cannot effectively pursue their criminal liability, and the problem of liability pursuit should be solved by explaining or modifying the existing specifications or establishing the crimes of designing, producing artificial intelligence products that do not conform to technical norms.
Keywords: *autonomous driving, criminal liability, traffic accident, technical norms*

Self-driving cars bring us a technological, convenient life, but the risks are also emerging. In recent years, self-driving traffic accidents have been reported, while the results have been unsatisfactory. Most autonomous vehicle systems employ AI solutions, and robotic decision-making reduces driver participation and makes responsibility challenging to clarify. As the driver's duty of care diminishes, the criminal responsibility of the autopilot system and the supplier behind it gradually becomes the research hotspot. If criminal liability cannot be sorted for suppliers of autonomous driving systems, car manufacturers and other subjects, this can lead to increased risk and difficulties in resolving related disputes. It also undermines the law's authority and hinders society's progress. Therefore, it is necessary to clarify the criminal liability of the relevant subjects and discuss the legislative and judicial issues on this basis.

1. Technical principles of autonomous driving

In recent years, with the hot development of new energy vehicles, autonomous driving has once again become the focus of market competition. Autonomous driving vehicles, or intelligent networked vehicles, are equipped with advanced onboard sensors, controllers, actuators and other devices. The integration of modern communication and network technology to realize the exchange and sharing of intelligent information between the car and the X (people, cars, roads, clouds, etc.), with complex environment perception, intelligent decision-making, cooperative control and other functions, which can achieve safe, efficient, comfortable and energy-saving driving, and can eventually realize a new generation of cars that can be operated in place of human beings.[1]

It can realize safe, efficient, comfortable and energy-saving driving that replaces human operation. Autonomous driving technology includes six aspects: environment perception, localization and navigation, processing and decision-making, path planning, motion control, and assisted driving.[2] This new technology provides cars with features such as unmanned driving in all scenes, emergency braking, automatic parking, and speed limit recognition, enriching the driving experience and making driving more humanized. China, considering the current status and future trends of the development of the autonomous driving industry, released the Taxonomy of Driving Automation for vehicles on August 20, 2021, which classifies driving automation based on five elements: detection response, motion control, simultaneous execution, minimal risk strategy, and design operating range of the driving automation system in the execution of dynamic driving tasks.

In the wave of the development of the autonomous driving industry, technology companies, start-ups, and traditional car manufacturers are competing to innovate, and there are two typical technology paths: one is that traditional automobile manufacturers gradually promote the transformation of assisted driving to automation within an acceptable cost, and gradually transition to full autonomous driving, this technical solution is called "modular" but in the research and development process, due to the insufficient amount of data and data noise of the training model, the model performance cannot be maintained stable and the progress is slow;[3] The other is the cross-border research of science and technology enterprises, increase investment in one step, and take the lead in opening the door to level 4 and level 5 autonomous driving through artificial intelligence, this path is called "end-to-end", thanks to the empowerment of AIGC (AI-generated content) technology, the complexity of the autonomous driving system has been greatly reduced and the performance has been dramatically improved, this technical path has become a significant trend.[4] The following suppliers of autonomous driving systems are the companies that use artificial intelligence technology to design and manufacture driving systems and provide the systems to automakers and consumers by writing algorithms and other means to realize autonomous driving functions.

[1] Refer to the Ministry of Industry and Information Technology "Management Standards for Road Test and Demonstration Application of Intelligent Connected Vehicles (Trial)". 2021. No. 97 // URL: https://www.miit.gov.cn/xwdt/gxdt/art/2021/art_cfeb55cbe100409db0b69590e0d9378a.html (accessed: 10 February 2024).

[2] *Sun Jian, Huang Runhan, Li Lin, Liu Qiyuan, Li Yudi*. Integrated Simulation Test Platform for Environment Perception and Planning Decision of Intelligent Vehicle // Journal of System Simulation. 2020. 32 (02). P. 237.

[3] *Hongyang Li, Yang Li, Huijie Wang* [et al]. Open-sourced data ecosystem in autonomous driving: the present and future // Scientia Sinica (Informationis). 2024. 54 (06). P. 1297.

[4] *Hu Shuanglu, Hua Xianping, Dou Min, Fei Huili* [et al]. The Status Quo and Development Trend of End-to-end Autonomous Driving of Automobiles // Auto Time. 2024 (13). P. 5.

2. The case of liability for autonomous driving traffic accidents

The issue of the allocation of criminal liability arising from autonomous driving traffic accidents has become urgent, and the number of reports related to autonomous driving is increasing year by year, and the cases of death are also common. The risk to the life safety of the public cannot be underestimated.

In March 2018, the United States Uber's self-driving car killed a pedestrian in Arizona and attracted global attention. On May 8, the United States National Transportation Safety Board released a preliminary investigation report into the case, which showed that the autopilot system did not accurately identify pedestrians or warn drivers, probably because the system was flawed, resulting in too strict conditions for obstacle avoidance. Uber modified the vehicle so that the system could not brake urgently under certain circumstances, and the driver could only brake manually. The board found that the company's "safety risk assessment process was inadequate" and that it had placed too much trust in the driver, but the driver did not do his job, which ultimately led to the tragedy. In 2019, Uber reached a settlement agreement with the victim's family. Finally, prosecutors determined that Uber was not criminally responsible. In September 2020, they indicted car driver Rafaela Vasquez for manslaughter, who pleaded guilty in July 2023 and was sentenced to three years of probation.[5]

In 2019, Kevin George Aziz Riad of Los Angeles, United States, ran a red light while driving a Tesla Model S and fatally collided with another vehicle. Prosecutors revealed at a hearing in March 2022 that Riad's Tesla ran a red light on Vermont Avenue and collided with a Honda Civic while travelling at 74 mph, killing two victims instantly. It is believed that the Riad was using Tesla's Autopilot system at the time of the crash. After more than three years of trial in the case, in June 2023, a judge sentenced him to a suspended sentence for manslaughter. On August 15 of the same year, Kevin Aziz Ria stated that he had no objection to the charge of manslaughter and paid more than $23,000 in compensation to the victim's family.[6]

In the case of the above-mentioned traffic accidents, criminal law faces many complex issues in dealing with related cases. The autonomous driving system supplier is exempted from criminal prosecution through settlement, and the driver often becomes the person who is criminally prosecuted. An important issue is whether suppliers should be held legally responsible and how to restrain them to ensure that they carry out technological innovation within the legal framework without harming society. At the same time, many people believe that artificial intelligence, which is the core of autonomous driving systems, may also become the subject of criminal liability in the near future, and how to define their liability is being discussed.

As mentioned above, the current nature and liability issues of self-driving car traffic accidents are reflected in the following aspects:

First, when the autonomous driving mode is turned on, the driver's role changes to a certain extent from the controller to the monitor, or even the occupant, and the occurrence of the traffic accident is not closely related to the driver's operation, whether the driver is responsible for this, and whether the driving system actually involved in the traffic accident can become the main body of responsibility.

Second, suppliers of autonomous driving systems are closely connected to autonomous vehicle traffic accidents. Because they provide core technology for autonomous vehicles, but trade secrets cannot be transparent. In this case, whether they are responsible for the self-driving traffic accident.

3. Qualifications for criminal liability of autonomous driving systems and suppliers in traffic accidents

A hundred years ago, human society desired to replace people in driving. It is also the ultimate goal of the development of self-driving cars, and the artificial intelligence technology provided by the tech giants has laid a solid foundation for this road. In many fields, artificial intelligence robots are gradually replacing some complicated work to facilitate human life and are also more "humanized". It is necessary to admit that today's AI can independently create, compete, talk, participate in economic activities, and even be used for infringement and crime. Therefore, as a typical artificial intelligence product, the discussion of the status of autonomous driving systems is of practical significance and inevitable.

3.1. Autonomous driving systems do not qualify for criminal liability

According to the "Taxonomy of driving automation for vehicles", the driving automation of levels 0-2 still belongs to the category of assisted driv-

[5] Refer to Riess R, Sottile Z "Uber self-driving car test driver pleads guilty to endangerment in pedestrian death case". 2023, July 29 // URL: https://edition.cnn.com/2023/07/29/business/uber-self-driving-car-death-guilty/index.html (accessed: 15 August 2024).

[6] Refer to DAZIOA S "Tesla driver to pay $23K in restitution for a 2019 Los Angeles crash that killed 2 people". 2023, December 29 // URL: https://apnews.com/article/tesla-autopilot-los-angeles-d65c48236d4c9d4a420b6f8307669832 (accessed: 15 August 2024).

ing. The system cannot complete all the dynamic driving tasks (DDT) in these three levels of driving and cannot be called automatic driving in the true sense. The driver and the system jointly complete the perception and recognition of external things. The driver controls the vehicle, and the system controls the vehicle according to the driver's settings. The system implements an auxiliary function, not a replacement for the driver, so liability qualifications are not questioned.

The function of artificial intelligence in Level 3 autonomous driving is gradually revealed. When the autonomous driving system is turned on, the system can complete the whole process of dynamic driving tasks from perception to decision-making and control, and the driver's task is transformed into the supervision of dynamic driving tasks and the takeover of driving in unexpected situations. In the case of a human takeover, the autonomous driving system remains on because the detection and response to targets and events still require the autonomous driving system, and the driver still has to operate according to the system's prompts. In this and more advanced autonomous driving, the system has essentially become the role of the driver and a participant in road traffic.

Without the intervention and participation of strong artificial intelligence, dynamic driving tasks cannot be continuously and automatically realized, and there are two different views on the discussion of the status of strong artificial intelligence.

One is the affirmative statement represented by Liu Xianquan, who believes that advanced intelligent robots autonomously carry out behaviours outside the scope of programs designed and compiled by humans, are out of human control and cannot be dominated, and may produce autonomous consciousness, so they no longer have instrumentality.[7] Based on the view that the basic concepts of behaviour and responsibility can be applied to legal persons in civil law and criminal law and that there is a possibility of expansion of the concept of the responsible person, Chu Chencheng believes that since the concepts of behaviour, attribution, and responsibility can be extended to the field of legal persons, the possibility of applying them to robots cannot be denied entirely.[8]

Scholars with opposing views argue that the essence of AI and humans is different. Regarding subject-object relations, artificial intelligence is not "natural" intelligence but "artificial" intelligence, which is a tool of human beings. Artificial intelligence has no place in the legal system, lacks both the capacity for rights and obligations, and is just a machine rather than a "human".[9] They are essentially human creations, cannot independently bear criminal responsibility, should not be given the ability to criminal responsibility, it is meaningless to impose "criminal punishment" on them[10], giving artificial intelligence robots the qualification of criminal subjects conflicts with existing ethics and laws, artificial intelligence robots can only exist in part of the field of production and life, and are tools created by humans to facilitate daily life.

According to the democratic basis of the principle of a legally prescribed punishment for a specified crime， the premise for a subject to be criminally regulated is that he or she can participate in criminal legislation on an equal footing. The current development of society cannot give AI citizenship. If their corresponding subject status is stipulated in the criminal law, due to the final guarantee characteristics of the criminal law, such operations are equivalent to a certain degree of recognition of their status in various other legal departments, which will be difficult for other laws to interpret and adapt.

This paper has a negative attitude towards the criminal subject qualification of autonomous driving systems. From the point of view of the philosophy of law, the subject of legal presuppositions is the rational subject.[11] In the legal world, human beings are rational. Each person gives his or her freedom of will to engage in various activities. Legal responsibility is the logical adverse consequence of self-selected behaviour under the control of free will.[12] All actions of a rational person are considered to be the result of a trade-off. A person should be held liable if he intentionally or negligently injures rights and interests prescribed by law or implied. On this basis, the "duty of care" arises in civil law, and violating the duty of care in criminal law also produces the subjective state of negligence. Artificial intelligence is also a representative of technological rationality.[13]

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[7] *Liu Xianquan*. Research on the Subject Status of Criminal Responsibility of Generative Artificial Intelligence such as ChatGPT // Legal Forum. 2024. 39 (02). P. 22.

[8] *Chu Chencheng*. Changes of Criminal Responsibility in the AI Era // The Oriental Law. 2018. (03). P. 29.

[9] *Ji Yang*. The Criminal Liability System in the AI Era Can Not Be Reconstructed // Journal of Comparative Law. 2019 (04). P. 126.

[10] *Niu Tianbao*. Criminal Law Response in the era of Artificial Intelligence — Analysis of criminal liability related to infringement of legal interests by artificial intelligence robots // Journal of Southwest University of Political Science and Law. 2020. 22 (01). P. 97.

[11] *Long Wenmao*. A Philosophical Thought on the Legal Subjectivity of AI // Science of Law(Journal of Northwest University of Political Science and Law). 2018. 36 (05). P. 25.

[12] *Zhang Wenxian*. Jurisprudence. Beijing : Higher Education Press. 2018. P. 166.

[13] *Long Wenmao*. A Philosophical Thought on the Legal Subjectivity of AI // Science of Law (Journal of Northwest University of Political Science and Law). 2018. 36 (05). P. 25.

The core of artificial intelligence products is algorithms, which are the regular guidelines that artificial intelligence must follow when performing calculations and decision-making. Autonomous driving systems are regulated by them all the time in operation. In this sense, artificial intelligence is also a product of rationality, a combination of people's knowledge and practical rationality. It can produce various goals according to different realities and achieve them autonomously. In this way, it seems reasonable to give them subject qualifications. However, following this path will fall to a misunderstanding. After the birth of a driving system, it will learn independently and produce "experience", which may not be clear to the developer. However, the system takes these experiences into account in order to improve its own driving services.

The system algorithm all reflects the choice of human will, no matter what level of artificial intelligence, it cannot be separated from the algorithm and run independently, so it is fundamentally different from people in this regard. According to Karl Larenz, man, by his very nature, is capable of autonomously and responsibly determining his existence and relations within the limits of the given possibilities, setting goals for himself and limiting his actions.[14] We can imagine that in the future, highly developed intelligent robots can formally determine their relationship with other things. However, due to the existence of algorithms, such decisions can only permeate human will.

Throughout the criminal laws at home and abroad, the direct purpose of various penal and non-penal punishments is to combat existing crimes, deter potential crimes, and prevent the recurrence of criminal acts. Based on the idea that one person is a knot in the network of social relations, through the application of criminal penalties, the person is subjected to sanctions from the state and temporarily loses the conditions for reoffending.

At the same time, the negative evaluation of the person by the authoritative judiciary undermines his or her position in social relations, makes the person feel pain, and realizes the effect on the offender and the victim and deters other potential offenders. The autonomous driving system can only be carried on the vehicle and the machine, there is no possibility of interpersonal communication, blood tie, and no independent personality, so all the current criminal and non-criminal penalties cannot achieve the purpose of punishing crimes. Removing code, disassembling parts or other measures, will not really have an effective effect on intelligent systems, but will only weaken the function of autonomous driving services. Even if criminal sanctions are imposed on autonomous driving systems, there is no standard or method to observe whether the system has "repented", and the danger of reoffending would, in fact, undermine the authority of criminal law.

3.2. Suppliers of autonomous driving systems are eligible for criminal liability

Before discussing their responsibilities, it is necessary to explain the special status of system suppliers. In the traditional automotive industry chain, the upstream part is the supply of raw materials and parts such as steel and plastics, and this part mainly produces automotive parts such as engines, body interiors and accessories, chassis, etc. In the long-term market competition, most of the enterprises have a stable supply relationship with downstream OEMs. In the middle of the industry, the automobile manufacturers are mainly composed of vehicle manufacturing, which provides automobile design, technology, and vehicle production qualifications and connects automobile sales and aftermarkets with upstream enterprises.

The development of autonomous driving has led to the involvement of cross-border technology companies in the midstream of the industry, providing artificial intelligence, whose products dominate the control of consumer vehicles and play a role in conjunction with the cars manufactured by OEMs, thus distinguishing them from traditional upstream component suppliers. However, they do not have the qualifications for vehicle production, cannot control the whole process of automobile production, and the quality of the final output of the vehicle factory is not directly related to them, so there is a clear difference between them and the vehicle manufacturer. If system suppliers are to be held criminally liable by attribution to automobile manufacturers, it will break the principle of bearing responsibility solely for one's own crime. This article discusses the following three aspects of the qualification of autonomous driving system suppliers for criminal liability in traffic accidents:

3.2.1. Suppliers of autonomous driving systems have the ability to identify and control

According to the general theory of criminal law, the subject's ability to be criminally responsible should be premised on the ability to identify and control in the sense of criminal law. Most system suppliers are companies and legal persons generally have the capacity for criminal liability. The main problem, however, is that this requirement for recognition and control is more focused on relevance to the facts of the case. Autonomous traffic accidents do not formally involve the suppliers, and it seems that the traffic accident has no connection with them.

[14] *Karl Larenz.* [German] Allgemeiner Teil Des Bürgerlichen Rechts / Translator : Wang Xiaoye [et al]. Beijing : Law Press, 2003. P. 47.

However, based on general experience and logic, autonomous driving system suppliers must have a deep understanding of traffic accidents and the ability to control them. On the one hand, as a designer of products with a wide range of scenarios, it is impossible not to have an early understanding and preparation for dangerous accidents. In the R&D process, autonomous driving system suppliers must be able to abstractly recognize that the systems they produce have the potential to cause and participate in traffic accidents and make necessary arrangements for these typical scenarios in advance to minimize the participation of autonomous driving systems in accidents. On the other hand, the upgrading of AI products relies on a large number of case studies, and traffic accident scenarios must be included. If traffic accidents cannot be warned and avoided in time, enterprises must also attach great importance to traffic accidents in order to survive and develop. As a result, autonomous driving system providers have the ability to identify and control the occurrence of traffic accidents.

3.2.2. Autonomous driving system suppliers are the ultimate beneficiaries and controllers

As the main body behind the traffic accidents of autonomous vehicles, suppliers have the main responsibility for the research and development of autonomous driving systems and directly benefit from autonomous driving system products.

Autonomous driving systems are still essentially commodities and belong to the market economy, and the pursuit of commercial interests is one of the tasks of the system, and it is also a source of experience for suppliers to improve products and upgrade technologies. Whether it is in the production, design, sales process, or in the daily scenario of consumers, autonomous driving systems will continue to provide information resources and economic wealth for relevant R&D companies. System suppliers adjust the behavior logic of the autonomous driving system by designing algorithms, updating policies and improving equipment, showing a continuous connection and monitoring relationship between suppliers and autonomous driving systems.

Except a small number of manufacturers who research autonomous driving systems independently, most of the manufacturers who work with system suppliers do not have the technical capabilities to test the system as much as possible according to the relevant national standards. The algorithm of the system designer is a trade secret, which is generally not disclosed to the public, and it is almost impossible to share it with automobile manufacturers. Manufacturers cannot test the system's response under all operating conditions in the post-production testing of automobiles, which is limited by conditions. The system supplier is not aware of all the working conditions in road traffic, and there are gaps in the compilation of algorithms or the possibility of wrong decisions due to the system's self-learning.

Based on the "governing principle," the person in charge of the risk is responsible for the risk and its consequences.[15] Autonomous vehicles have unique properties compared to traditional cars. The autonomous driving system is not under the driver's control, and the driver only needs to follow the traffic regulations to drive. Autonomous driving systems are generated without the control of the automaker, who only has to test the vehicle by test standards to ensure its quality. Many algorithm defects are difficult to observe due to the lack of technical standards, and autonomous driving systems, which are AI products, are still at the mercy of producers in use, so it is necessary to prevent accidents caused by intentional or negligent design errors of system suppliers. In the event of a traffic accident, the responsibility of each subject must be investigated.

There is almost no dispute over the responsibility of the driver in unmanned driving. The automobile manufacturer only needs to test the vehicle in accordance with the test standards to ensure the quality of the car, and at the same time inform the driver of the precautions for use in a timely manner. Violations of transportation regulations by autonomous vehicles under the system's control are governed by the system supplier, provided that both the driver and the vehicle manufacturer have complied with the obligations created by the law and have not violated the operating and use regulations. Only the system supplier can truly take responsibility for the autonomous driving system.[16] Only by examining the relevant obligations according to the attributes of each party can the criminal liability of autonomous vehicle traffic accidents be truly clarified. If the criminal liability of multiple subjects is denied, it is like a disguised recognition of the criminal liability qualification of the autonomous driving system.

3.3.3. It is possible to hold the supplier of the autonomous driving system criminally responsible

Pursuing the criminal liability of the system supplier directly beyond the vehicle manufacturer raises the question of whether the principle of "technology neutrality" has been violated. In fact, technical issues be involved that "technology neutrality" cannot be used as an absolute justification.

[15] *Lao Dongyan.* Reflection and reconstruction of the theory of possibility of foreseeing in negligent crime // Peking University Law Journal. 2018. 30 (02). P. 326.

[16] *Liu Xianquan.* The Attribution and Nature of Criminal Liability for Crimes Involving Artificial Intelligent Products // ECUPL Journal. 2021. 24 (01). P. 52.

Technical behaviors include the technology development and the act of providing technology. In terms of technology development, as long as the developer does not have the subjective intent to commit a crime or help a crime, even if others use the autonomous driving system and the car to commit a crime, it cannot lead to a crime.

However, if criminal intent arises after the development is completed, the technology development behavior cannot be evaluated separately, and criminal responsibility should be pursued by examining the technology provision behavior. The act of providing technology is divided into two situations: one is to provide technical assistance after contacting others knowing that others are going to commit crimes, which should be classified as an aider according to China's accomplice theory. The other is to provide technical assistance without intentional communication, and according to China's accomplice theory, it cannot be recognized as a one-sided accomplice, so there is an obstacle that cannot punish one-sided accomplice in this scenario, but in the field of network information, China solves the negative impact of one-sided assistance by establishing the crime of aiding criminal activities in the information network.

Therefore, the act of neutral technology provision is not a justification for exculpation,[17] and the above practice also provides a practical reference for the research on the criminal liability of autonomous driving system suppliers in this paper.

To reasonably delineate the responsibility boundaries between traditional car companies and system suppliers, it is necessary to seek more professional normative documents as a reference. Previously, the Ministry of Industry and Information Technology of the People's Republic of China issued the national standard "Intelligent and connected vehicles-Track testing methods and requirements for automated driving functions" (GB/T 41798-2022), which clarified the test requirements for various traffic scenarios, providing guidance for car companies to test autonomous driving functions. Vehicle manufacturers can test by this national standard during the vehicle testing phase. Even if a self-driving car causes a traffic accident, if the car company strictly follows the test standards for testing, it will not be criminally liable.

In China's road traffic legislation, there are also provisions on the supplier of autonomous driving systems as the subject of obligation, such as the "Jiangsu Provincial Road Traffic Safety Regulations".[18] It can be seen that it is difficult for autonomous driving system suppliers to stay out of road traffic accidents. However, since the responsibility for road traffic accidents in China can only be borne by natural persons, the occurrence of autonomous driving traffic accidents is also easy to transfer the responsibility to the manufacturer. The autonomous determination of autonomous driving systems makes it easy for suppliers to be perceived as obligated to foresee results. According to China's theory of negligence crimes, the breach of the obligation to foresee the result is an element of negligence crime. The defense is that there is no anticipated possibility.[19]

In this case, the duty of care of the system supplier is very demanding, which is not conducive to the commercial development of intelligent networked vehicles in China. Therefore, it is also necessary to clarify the design specifications of the industry and study new standards for the determination of the fault obligation of the subject. If the supplier can comply with these specifications in the design and has the relevant technical standards for the quality and actual operation of the driving system, there is no criminal liability even in the event of a traffic accident.

REFERENCE

1. *Chen Jinbo.* Regulation Levels and Governance Concept: The Supervision Approach to Autonomous Vehicles // Journal of Soochow University (Law Edition). 2019. 6 (01).
2. *Chu Chencheng.* Changes of Criminal Responsibility in the AI Era // The Oriental Law. 2018. (03).
3. *Hongyang Li, Yang Li, Huijie Wang* [et al]. Open-sourced data ecosystem in autonomous driving: the present and future // Scientia Sinica (Informationis). 2024. 54 (06).
4. *Hu Shuanglu, Hua Xianping, Dou Min, Fei Huili* [et al]. The Status Quo and Development Trend of End-to-end Autonomous Driving of Automobiles // Auto Time. 2024 (13).
5. *Ji Yang.* The Criminal Liability System in the AI Era Can Not Be Reconstructed // Journal of Comparative Law. 2019 (04).

[17] Refer to Tu Longke, Cao Xiaoye "Technological neutrality is not a justification for behavior". 2022, May 17 // URL: https://newspaper.jcrb.com/ (accessed: 15 August 2024).

[18] Article 60 of the Road Traffic Safety Regulations of Jiangsu Province stipulates that" In case of road traffic accidents, automobile manufacturers, autonomous driving system development units, equipment providers and other relevant entities shall cooperate with the traffic management department of the public security organ to investigate and handle."

[19] Article 16 of the Criminal Law stipulates that" If an act causes damage to a person, not with intent or negligence, but due to irresistible or unforeseen causes, it is not considered a crime."

6. *Karl Larenz.* [German] Allgemeiner Teil Des Bürgerlichen Rechts / Translator : Wang Xiaoye [et al]. Beijing : Law Press, 2003.
7. *Lao Dongyan.* Reflection and reconstruction of the theory of possibility of foreseeing in negligent crime // Peking University Law Journal. 2018. 30 (02).
8. *Li Xiaoming.* Introduction to administrative criminal law. Beijing : Law Press, 2003.
9. *Li Xiaoming.* On the Technical Specifications in the Regulation on Criminal Law of Artificial Intelligence // Oriental Law. 2021 (02).
10. *Liu Defa, Bai Yanan.* Will and Consciousness: Responsibility Theory of Artificial Intelligence Pilotless Vehicles // Journal of Zhongzhou University. 2022. 39 (01).
11. *Liu Xianquan.* Identification of Subjective Crimes of Developers in Artificial Intelligence Crimes // Journal of Comparative Law. 2019 (04).
12. *Liu Xianquan.* The Attribution and Nature of Criminal Liability for Crimes Involving Artificial Intelligent Products // ECUPL Journal. 2021. 24 (01).
13. *Long Wenmao.* A Philosophical Thought on the Legal Subjectivity of AI // Science of Law (Journal of Northwest University of Political Science and Law). 2018. 36 (05).
14. *Lv Yingjie.* The Criminal Responsibility on Products in Risk Society // Science of Law (Journal of Northwest University of Political Science and Law). 2011 (06).
15. *Niu Tianbao.* Criminal Law Response in the era of Artificial Intelligence — Analysis of criminal liability related to infringement of legal interests by artificial intelligence robots // Journal of Southwest University of Political Science and Law. 2020. 22 (01).
16. *Peng Wenhua.* Duty of Care in the Autonomous Vehicle Offence // Political Science and Law. 2018 (5).
17. *Sun Jian, Huang Runhan, Li Lin, Liu Qiyuan, Li Yudi.* Integrated Simulation Test Platform for Environment Perception and Planning Decision of Intelligent Vehicle // Journal of System Simulation. 2020. 32 (02).
18. *Zhang Mingkai.* The Jurisprudence of Allowable danger // Social Sciences in China. 2012 (11).
19. *Zhang Wenxian.* Jurisprudence. Beijing : Higher Education Press, 2018.
20. *Zheng Youde, Wu Chunyan.* The change of legal norms in the reconstruction of information network social norm system // Science Economy Society. 2000 (03).
21. *Zou Ziming.* The Status Quo, Dilemma and Relief of Crime and Punishment System from the Perspective of Automatic Driving // Journal of Harbin Institute of Technology (Social Sciences Edition). 2024 (01).