Criminal Law Regulation on Driverless Car Traffic Accidents

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Abstract: In the context of the era of artificial intelligence, driverless cars are divided into driverless cars in the weak AI stage and driverless cars in the strong Artificial Intelligence phase. Driverless cars have many advantages over traditional cars, but they also bring criminal risks to public safety and citizens' personal rights, so under the premise of exerting the pre-legal role of civil law and administrative law, it is necessary for criminal law to intervene in time, build a prevention and punishment system that is suitable for the speciality of driverless cars, control the behavior that causes major traffic accidents, and balance the relationship between social public safety and intelligent and high scientific and technological progress.

1. Introduction

The explorers and developers of driverless technology intend to transform the existing mode of transportation and free the human brain and hands at the same time. But behind the development of technology, it is inevitable that the responsible subject is ambiguous situation. We must actively prevent the problems posed by driverless technology and plan ahead before the greater danger is reached [1].

2. Analysis of the Principle of Driverless

Driverless technology is the driving technology of driving on public roads by the pre-designed program of automobile manufacturers and designers under the premise of driver-free operation and intervention, which mainly relies on artificial intelligence such as GPS positioning system and image recognition system to realize the automatic driving of vehicles. At this stage, driverless technology is still in the early stages of human-computer interaction, requiring driver and back-office artificial intelligence to help drivers slow down the driving pressure, did not really achieve the liberation of human hands [2].At present, most of the self-driving cars on the road are in the level of assisted self-driving, according to the internationalwide adoption of the International Automotive Engineering Academic Organization (SAE) classification standards, the self-driving technology is divided into six levels. No level (0 level), the car does not contain self-driving mode, the driver is responsible for the driving process. The first level, assisted driving mode, helps the driver with non-major driving tasks, such as steering power assist systems. The second level, the autonomous driving system can perform most of the vehicle's driving tasks, and the driver is responsible for regulatory and maneuvering tasks outside the self-driving system, such as a fixed-speed cruise system. The third level, in certain road conditions can greatly reduce the driver's driving burden, but the driver must be ready to take over. The fourth level, complete with fully autonomous driving tasks in specific areas and environments, does not require the driver to be ready to take over. The fifth level, in any area and environment, can be completely self-driving, the driver can completely get rid of the driving task. In level 0-3 the driver is in a state of control of the vehicle, in the 4-5 stage the driver can be out of the driving. Obviously, at different levels, the scale of causal relationship between the driver and the result varies in the event of a traffic accident. Whether to bear criminal responsibility is also related to the manufacturer, designer's criminal responsibility [3].

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3. Problems with Driverless Traffic Accidents

3.1 The Ambiguity of the Subject of Accident Liability

The explorers and developers of driverless technology want to transform the existing mode of transportation to free the human brain and hands at the same time. But behind the development of technology, it is inevitable that the responsible subject is ambiguous situation. Driverless car sellers, with a forward-looking view to choose such cutting-edge things as the development of enterprises and development direction [4].But because sellers don't have the ability to audit and test driverless cars as smart technologies, it seems difficult to hold driverless cars accountable for traffic accidents. For the buyers of driverless cars, the author thinks that it is a more controversial part of the responsible subject. Table 1 shows the level and characteristics of driverless cars for four reasons: first, driverless cars have high intelligence, regardless of the L0-L4 model of the car, make the car personnel and intelligent car tightness reduced; In determining the legal liability of the purchaser, because of the characteristics of the driverless car itself, compared with the traditional car drivershould should be correspondingly reduced the buyer's responsibility; But whether this view deviates from the principle of guilt and self-responsibility is worthy of our further consideration. The subjectivity of human beings is weakened, the subject of responsibility is blurred, and needs to be redefined, which is not only a problem faced by driverless cars, but also a problem that can not be avoided and needs to be solved in the whole era of artificial intelligence [5].

Table 1 Driverless Car Ratings and Characteristics

Grade	Name	Pattern features and technical support
L0	Driver mode	Like conventional cars, the driver is judged by the road conditions
L1	Assisted driving stage	With the driver operation as the core, intelligent system assists the driving activity, reduces the occurrence of accidents. Reverse image and detection radar, route deviation and frontal collision warning systems have been configured.
L2	Semi-unmanned stage	Still with the driver operation as the core, than the previous two stages can prevent and control more risks. Automatic cruise, automatic parking and other technologies are configured.
L3	Highly driverless stage	People and intelligent system role interchange, intelligent system as the core of the driving mode, people play the role of assisted driving, and in certain circumstances to restore the identity of the driver.
L4	Fully driverless stage	Intelligent system is fully controlled and does not require intervention in human behavior and factors

3.2 Lack of Uniform Norms and Weak Administrative Control

In recent years, many countries at home and abroad have carried out legal control exploration of driverless cars, a summary analysis can be seen that the current national legal exploration focus is mainly on giving the legal status of self-driving technology, test access and market access mechanism construction and improvement, technical security standards definition, responsibility, ethical disputes and network security and privacy protection six aspects. Although countries are actively exploring the effective program of driverless legal regulation, but at present, most countries still do not have a unified regulation in the driverless car industry, China also has such a problem. At the same time, when driverless cars are involved in traffic accidents, different brands of driverless cars have different technical levels, which makes it more difficult for the traffic management departments of public security organs to determine the liability of accidents in accordance with the existing laws and regulations, which inevitably leads to the deviation of the identification [6].

3.3 It is Difficult to Fit the Existing Traffic Offences

At present, the legal exploration of driverless driving is mainly concentrated in the field of administrative law and civil law, and the attitude of countries in the field of criminal law is ambiguous, and some deliberately avoid the meaning [7].Looking back at the incident in Arizona in March this year in which self-driving cars killed pedestrians , preliminary police investigations

revealed that pedestrians suddenly crossed the road and the tragedy occurred . However, it is also an indisputable fact that driverless cars do not recognize pedestrians in time and respond, so although driverless technology is safer than traditional cars, it is not ruled out that in the process of transportation, driverless cars violate relevant laws and regulations, causing major traffic accidents, and thus conform to the traffic accident crime components [8].

3.4 The Principle of Culpability Has Been Affected

Guilty is an important principle of modern criminal law, that is, the perpetrator is only responsible for the criminal acts committed by himself and the harmful results caused by criminal acts, and does not implicate others and is not implicated without cause. Driverless cars are favored because of their high intelligence, and it is a departure from the principle of culpability to require vehicle users to take responsibility for intelligent service providers and smart car makers who do not even appear in the transportation process when the vehicle personnel put their guard off and are taken over by the driverless system [9].

4. Legal Analysis and Solution of Driverless Traffic Accidents

When self-driving cars commit infringement on the road, they use the traditional criminal law theory to convict and punish, lack reasonable requirements for conformity support, and need to make changes to the criminal law and related laws to conform to the future life state of the main mode of operation with artificial intelligence [10].

4.1 Learn from the Experience of Foreign Legislation Some Developed Countries in the West to Carry out Relevant Legislation on Driverless Cars.

At the end of 2016, the U.S. National Highway Traffic Safety Administration officially issued the Federal Driverless Policy Guide, which must be followed by all individuals and companies designing, installing, and planning to sell driverless cars, and that any employee of a non-manufacturer or testing agency driving an unmanned vehicle will be considered to be in production, whether during the testing or formal production phase. To ensure the implementation of the Guide, manufacturers of self-driving cars are required to provide relevant safety assessment information, such as driving records, privacy and system safety [11]. In addition, automakers and sellers have an obligation to provide education and training to their customers, with the aim of making them aware of and safe lying with driverless cars. At the same time, in the area of safe production, the U.S. Department of Transportation issued federal motor vehicle safety standards - No. 150 in December 2016, requiring all light vehicles to install v2v communications equipment. v2v is the key to driverless vehicle driving, and data docking and exchange between vehicles and environments via the Internet and wireless Internet to improve and expand vehicle sensing safety capabilities and range. U.S. legislation on driverless cars ensures that driverless technology is developed under regulation [12].

4.2 Establishment of Specialized Technical Expertise Bodies

As mentioned earlier, the current level of driverless car technology by the developers to judge, has not yet formed a unified industry norms and technical standards. Based on the profit-making characteristics of commercial behavior, when driverless cars are put into mass production or even widely sold to the market, there will inevitably be a disorder of uneven level of driverless technology, in the case of traffic accidents, it is difficult to accurately identify the responsibility for accidents, illegal or criminal acts can not be effectively regulated. In this regard, the government departments authorized the establishment of a special unmanned technology level identification institutions, the driverless to accurately define the level of the control of technology, easy to judicial administration and other departments to determine the responsibility for accidents.

4.3 Bringing Intelligent Car Robots into the Main Body of Criminal Law

The L4 fully driverless car no longer needs to be involved in human behavior and factors while

driving, and a fully driverless car is the equivalent of an intelligent car robot. For the behavior of intelligent automobile robot sifts beyond the programming scope, it is determined whether to be held responsible from the perspective of intelligent service provider, intelligent automobile manufacturer and user. For the behavior of intelligent automobile robot beyond programming, it can be fully included in the scope of criminal law regulation, it should be affirmed that intelligent automobile robot can be involved in criminal law under criminal offences to control, and according to the degree of human and system function to carry out hierarchical control. Separate the use of elimination procedures to set, damage the fuselage means of criminal law regulation

5. Conclusion

The traffic accident of driverless car brings great challenge to the determination of traffic accident crime in the traditional criminal law, and has the impact on the intrinsic value and responsibility of the law. Through the experience of legislation at home and abroad to improve the law to ensure that the social life is compatible.

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