INDIAN BAR REVIEW

Vol. 46 (3) 2019

A Referred Journal

Editor

DEBI PRASAD DHAL

Joint Editor

A. RAMI REDDY

BAR COUNCIL OF INDIA

Chairman - **MANAN KUMAR MISHRA**

Vice Chairman - **SATISH ABARAO DESHMUKH**

Chairman, E. C. - **APURBA KUMAR SHARMA**

BAR COUNCIL OF INDIA TRUST

NEW DELHI

INDIAN BAR REVIEW

VOLUME 46 (3) JULY – SEPTEMBER 2019 NUMBER 3

CONTENTS

ARTICLES

* * *

ACCIDENT BY AUTOMATED CAR – A VANISHING POINT OF LAW

Prof. (Dr.) Vaibhav Goel Bhartiya*
Dr. Prem Chandra**
Dr. Aditya Kumar Tyagi***

ABSTRACT

Life and development are directly proportionate to each other. Development which remained synonymous to innovation is based on technological advancement in this era of digitalization. Innovation! Yes innovation in technology is changing the life and the life style of individuals around the world. Here it is pertinent to note that this is only technology which worked behind the concept of globalization where no one remained untouched from the impact of technology. It has made the life of human being on buttons with full of comforts and with minimum human intervention. The same is true, in case of mechanical devices which first became electronic and now in digital form they are available in the global society. The manufacturers of vehicles, their suppliers and regulatory authorities of different countries have shown their eagerness to develop the autonomous vehicles and intelligent transportation system for the benefit of new generation. Intelligent transportation system is based on the concept of connected

* Professor and Dean, Faculty of Law, Sardar Patel Subharti Institute of Law, Swami Vivekanand Subharti University, Meerut.
** Assistant Professor, Faculty of Law, Sardar Patel Subharti Institute of Law, Swami Vivekanand Subharti University, Meerut.
*** Advocate, High Court of Allahabad.

cars. Emergence of the idea of connected cars raised the eye brows of awakened legal fraternity. Though the legislators or law makers are confronting on the legal issues involved with the operational use of connected cars, still, States are neither denying the unforeseen fatal consequences nor having a comprehensive law to deal with such consequences associated with 'connected car' or 'autonomous vehicle'. Everyone is so passionate about this technology that highly populated and dense countries like India and China are also passionate to have such connected cars comprising intelligent technology which is being considered potential to transform the traffic management of a country. It may solve the problem of the safety of pedestrians as well as minimize the road accidents. But before effective and safe operation of such autonomous vehicles, it is highly required to address the key issues like responsibility of manufacturers, liability of owners, liability of network operators, liability of drivers, threat of cyber hacking, cyber terrorism, privacy & data protection, insurance liability issues, and product liability issues in general along with all civil liability and criminal liability in particular in case of accident. The present paper is focusing on the legal magnitude of accident for fixing the undetectable liability in case of 'autonomous car'. The paper is further an effort to formulate the founding jurisprudence for the better utilization of this technology of autonomous car.

Key Words: *Technology, Autonomous Vehicle, Manufacturer, Legal Issues, Liability.*

INTRODUCTION

HUMAN life is considered as the best creation by God, which is filled with many ups and downs. God has given everything to human beings to control the life but not time. It is said that 'time is stronger than man'. Man can invent the things but cannot ignore the consequences of that invention as every boon has a curse too. Today, advancement in technology has much potential to change the life style of everyone. Robot has already taken the place of human being while operation of machinery and after substantial success of the robot science, human brain started thinking for the replacement of humans as much as possible. Similarly, it is highly expected that driverless car will replace the human drivers in future because the idea of driverless car is for the replacement of drivers. Like other inventions, technological consequences are also associated with such

driverless car too. Human drivers may feel tiredness, distraction or sleeplessness. They may be driving under the influence of drugs and/or alcohol. Driverless car is considered as the solution to such problems of drivers. According to the National Highway Traffic Safety Administration (NHTSA), nearly 40,000 Americans died on the roads, and about 90 percent of those deaths are due to human error.[1] The situation in India is even worse as daily newspaper serves more than hundred accidents toll during morning tea every day.

Though it is expected that the invention of driverless car also known as fully autonomous vehicle will ultimately eliminate all these problems of human driving yet it is too early to conclude the same. In fact alike other technologies, technology of self driving cannot be perfect in itself. There are so many challenges and socio-techno-legal issues involved in the operation of idea of autonomous car. Presently, car users are experiencing a variety of features as well as social media apps associated with cars. By linking our smart phones to our cars one can use satellite navigation system too. Users can take help of drivers assisting technologies to find the tricky parking spaces. BMW's connected drive system has Face book, Twitter and a Wiki local app which works like an in-car travel guide. Mercedes-Benz is associated with the Yelp which assists the driver to locate the restaurants. Users can use their smart phone to lock or unlock doors of the car remotely and they can also check fuel level in the car. However, at the same time the technological advancement has also made it possible to steal a car by way of network misappropriation. The University of Michigan (UM) is working in collaboration with the Ford, Microsoft and Intel[2] for developing social media apps specifically for connected cars but they do not comprehend their fatal consequences. Legislation, civil or criminal, is totally inadequate to tackle the after effect of the hassle-free operation of such cars. While travelling on road, Caravan Tracker app allows the users to get connected with other vehicles and shares information with each other.

---

1. Self Driving Cars Liability and Insurance, Hogan Injury,(June 17, 2019, 11:15 AM), https://www.hoganinjury.com/self-driving-cars-liability-and-insurance.
2. https://www.linkedin.com/in/rakesh-naga-chinta accessed at Subharti Law College at 19.25 Hrs Meerut India. (Rakesh Naga Chinta Product Manager Intern at Hyperspace Ventures Ann Arbor, Michigan Venture Capital & Private Equity).

It also can share the information related to different routes, including petrol stations, landmark locations of the route etc which may also be an issue of privacy. Similarly, the Volvo has also introduced a cloud service for car-to-car communication which can provide the information related to the conditions of roads to other connected vehicles. It also can detect the slippery road conditions and send the information to Volvo cloud and it will share the information to other drivers as well as to road authorities. The Volvo cloud can also be used to alert cyclists by using the car's connectivity and app in the cyclist phone. Furthermore application like Waze allows users to share real time traffic and road information including accident and activities of police on the road[3] which is already an issue for investigating agencies.

Further there are the applications which may intermeddle with the already installed apps in mobile connected with the car and thus create issues with such driverless car. When E-economy is not considered safe on this planet then the issues of managed accidents may also arise in such autonomous or driverless or automated cars. It will be a big task for the law makers and the stakeholders in justice delivery system as well as the manufacturers of such vehicles.

METHODOLOGY

Present papers deals with the fundamental research involving many techno-legal issues due to the absence of any specific legal framework in India or abroad. The researchers have tried to evaluate the hypothesis based on one specific research question *i.e.* what should be the quantum of liability for an accident by driverless car and who can be held liable for the same the owner, consumer, insurance company, instructor, network provider, device manufacturer etc. In true sense present piece of work is a problem with three disciplines *i.e.* technology, society and the law. Though these are distinct and not interlinked variables but seems one while determination of accidental liability caused by the driverless car. The approach is slightly quasi disciplinary with a double eclipse over the main discipline of law to find out the magnitude of the liability along with varied consequences of accident. To come on some concrete findings, conventional legal sources have been used for this study. Here secondary sources of data and the relevant legal propositions have been analysed for

3. Nigel Parker, "et al" Autonomous and Connected Vehicles: Navigating the Legal Issues, Allen & Overy (June 29, 2019, 7: 35 PM).

this purpose. In case of accident by driverless car for fixing the quantum of liability in law the efforts have been made to apply relevant present legal propositions. The paper is based on the analytical research module.

THE CONCEPT OF HIGHLY AUTOMATED VEHICLES

Highly Automated Vehicles (HAVs)[4] are those vehicles which are designed with ability to control their movement without any intervention of human drivers. They are known as driverless, self driving, connected, autonomous, or robotic vehicles etc. A fully automated vehicle has a system in which certain functions of driving are automated. For example, adoptive cruise control system acts as to maintain a certain distance from the vehicle in front of the car and works as automatic breaking if required. If the vehicle is semi- automated, system works and takes action on the driver's direction. The driver may retake the control of vehicle if required.[5] An autonomous vehicle drives itself in most or all conditions. A connected vehicle is able to access internet connected to wireless network. It can communicate with other vehicles, traffic management infrastructure, manufactures, fleet operators etc. In September 2016, Society of Automotive Engineers (SAE) has released a standard policy related to autonomous driving system. It has been adopted by major stakeholders of the field. To refer the all types of automated vehicles by the terms autonomous, self driving, autonomous vehicles, auto-pilot or driverless, being used by different media reports and scholars is confusing and therefore, all of them are not used in the standard policy adopted by SAE. Automated Driving System or Driving Automation System is more appropriate terminology considered in the SAE standard policy.[6]

---

4. The phrase "Highly Automated Vehicles (HAVs)" is used by National Highway Transportation Safety Administration of United States of America in short known as NHTSA. It refers both autonomous and automated cars together.
5. Jeffrey J. Jones, "et all" Legal Issues Related to Development of Automated, Autonomous and Connected cars, Jones Day, (July 1, 2019, 12:08 PM), https://www.jonesday.com/files/Publication/f5cf8577-3267-4f78-bbf8-ec32333cc49b/Presentation/PublicationAttachment/4a78a73f-67e6-4d18-9845-ed6b0eb7561e/Legal%20Issues%20Related%20to%20Autonomous%20Cars.pdf.
6. Ching Yao Chan, Advancements, prospects, and impacts of automated driving Systems, 6 International Journal of Transportation Science and Technology, 2017 (01 July, 2019, 12:30), https://www.sciencedirect.com/science/article/pii/S2046043017300035.

The development of autonomous vehicles is classified into five categories. The US Department of Transportation's National Highway Transportation Safety Administration has classified the autonomous vehicles also into five categories. The Society for Automotive Engineers (SAE), India, has also made similar classification.[7] This classification is from Zero Level to Level Five.[8] Level Zero is no automation and human driver has complete control over vehicle. Level One is assisted automation. At this level only one function can be automated and the vehicle's automation assists to the driver for regaining the control over vehicle. Level Two is partial automation. At this level more than one function of vehicle may be automated. But, still the driver is required to have and pay full attention upon the vehicle. Level Three is high automation. At this level, most of the functions are adequately automated and this level of automation gives liberty to the drivers to be safely involved in any other works activities. It is expected from the driver that he will be available only for getting occasional control over vehicle. Level Four is full automation and the human intervention is not required at this level. Vehicle of this level will be able to drive itself without a human operator. The vehicle has to be designed to perform all driving activities of entire trip. The driver is expected to provide only the input for destination. He is not expected to be available for taking control over vehicle during complete trip.

V2V and V2I (vehicle to vehicle and vehicle to infrastructure) technology allows one vehicle to make communication with other vehicles and with the infrastructure of roads and traffic also. Vehicle speed and distance of other vehicles can be adjusted in response to the conditions of the road. V2V technology allows vehicles on the road to talk each other by sharing data of speed, road conditions through a network created among vehicles. This will help in avoiding crashes, traffic congestion etc. Taking one step further, V2X (vehicle to everything) technology will make possible for vehicles to communicate with smart traffic signals and conduct transaction at a petrol pump. According to a research of IHS Automotive

7. Mobility Engineering: Automotive, Aerospace, off-highway, SAE India, Quarterly Publication, Volume 3 Issue 1, March 2016, http://saeindia.org/uploads/10.MARCH%202016. pdf.
8. Kanwaldeep Kaur & Giselle Rampersad, Trust in Driverless Cars: Investigating Key Factors Influencing the Adoption of Driverless Cars, 48 Journal of Engineering and Technology Management, 87, 87-87 2018. https://www.sciencedirect.com/science/article/pii/S0923474817304253.

the growth of cars of this type will be six fold by 2020. IHS has predicted that by 2035, 21 million autonomous vehicles will be on roads.[9]

Currently, many manufacturers are developing their technology to introduce autonomous vehicles. Google is one of them which have started to test its driverless vehicles on public roads.[10] These autonomous vehicles are a good example of growth in technology and innovation. It is expected that autonomous vehicles will take critical decisions by themselves while driving on the road. In general this technology is beneficial to all but in particular it is more beneficial for disabled, elderly persons. Most of the accident occurs on highways due to human error while driving. Driverless vehicles have the potential to remove human error and thus the reduction of traffic accidents to a large extent. But the issue of cyber security has to be faced by the technologist for getting success in their mission.

Another question is who will be responsible when an automated vehicle crashes, and how insurance sector will work in that scenario. Therefore, it is a big challenge for policymakers, lawmakers to introduce and adopt new rules, regulations, law and policies to face these challenges.[11] A coherent, comprehensive, appropriate and strategic legal framework at the national as well as international level is the need of time. The best solution would be by providing a fine balance between promotion of innovation, ensuring proper legal remedies for any harm caused by innovative technology and protecting the interest of general public.

DEVELOPMENT OF HIGHLY AUTOMATED VEHICLE, LAW AND POLICY IN INDIA

In 2016, during Defence Expo which was held in New Delhi, Hi-Tech Robotics Systemz Limited (HRS) company displayed a vehicle viz. "Novus Drive",[12] claimed to be the first driverless shuttle bus manufactured in

---

9. Chad Morley, 7 Connected Car Trends Fuelling the Future, (July 1, 2019, 9:58 AM), https://medium.com/iotforall/7-connected-car-trends-fueling-the-future-946b05325531.
10. William J. Kohler and Alex Colbert-Taylor, Current Law and Potential Legal Issues Pertaining to Automated, Autonomous and Connected Vehicles, 31 Santa Clara High Tech. L.J. 99 (2015). http://digital commons.law.scu.edu/chtlj/vol31/iss1/3.
11. Sven A. Beiker, Legal Aspects of Autonomous Driving, 52 Santa Clara L. Rev.,1145 (2012).
12. India's first driverless shuttle bus displayed at Defence Expo 2016, Deccan Chronicle, (July, 7 2019, 3:12 AM), https://www.deccanchronicle.com/

India. The purpose to display this shuttle was to revolutionise the transport system in controlled atmosphere like intra-University travel, offices premises spread in large area, care of elderly persons etc. India is going to introduce driverless trains on underground line in Mumbai.[13] According to KPMG survey, Indians have given most positive response about automated vehicles. They have showed their willingness to purchase or use driverless car. So many entrepreneurs in India are working for developing different parts and products of automated vehicle for the purpose of exporting to other countries.

However, to introduce the technology of driverless car in India is very complicated because the situations of India are different from developed countries. This technology may not be perfectly suitable to Indian cities. The infrastructure and environment of Indian cities may have to be changed according to optimum requirement of this technology. The Union Minster of Road Transport and Highway has also stated that driverless vehicle may not be permitted on Indian roads because they will pose a measure threat to employment in India.[14]

To promote the innovation and technology, it is proposed to amend the motor vehicle law in India. The Motor Vehicles Amendment Bill, 2016 seeks that the provisions of the present Act will not apply to certain types of vehicles. The ultimate purpose is to eliminate and remove legal hurdle by liberalising the law for introducing the innovation in transportation system.

DEVELOPMENT OF HIGHLY AUTOMATED VEHICLE AND CURRENT INTERNATIONAL LEGAL FRAMEWORK

National Highway Traffic Safety Administration (NHTSA) is a federal agency of USA which is promoting aggressively to the idea of automated

---

business/autos/010416/india-s-first-driverless-shuttle-bus-displayed-at-defence-expo-2016.html.

13. KPMG 2019 Autonomous Vehicles Readiness Index (AVRI). It is a tool to measure the 25 countries level of preparedness of automated vehicle. In 2018, India has got 20th rank in AVRI. In 2019, India has received 24th position.
https://assets.kpmg/content/dam/kpmg/xx/pdf/2019/02/2019-autonomous-vehicles-readiness-index.pdf.
14. Preparing for a driverless future, Nishith Desai Associates, 2019 (July, 3 2019, 3:59 A.M.), www.nishithdesai.com.

vehicles. The agency has shown his keen interest and willingness for the advancement and regulation of this technology. According to NHTSA, till 2025 fully automated vehicles with complete safety features will become common.[15] There is no doubt that in very near future the people will be using driverless cars commonly. Being a federal agency, NHTSA has very wide authority and basic responsibility to formulate and design the Federal Motor Vehicle Standards for new motor vehicles and their equipments. Responsibility to communicate and educate the public about motor vehicle safety rules as well as to ensure the compliance of standards is also vested in NHTSA. NHTSA has declared the new federal policy in September, 2017 for automated vehicle. It has replaced the federal policy for automated vehicle issued in September, 2016. The main object of the policy is to "the safe deployment of automated vehicles". The NHTSA has accepted the idea of automated vehicles and recognised in the policy that ADS may have no human driver.

Under the authority of United Nations, the Geneva Convention on Road Traffic was adopted in 1949. It was replaced by the Vienna Convention on Road Traffic of 1968. Presently, 74 participatory members of United Nations have ratified the treaty. All the member States of European Union except the United Kingdom and Spain have adopted the convention. The main object of the treaty is to promote and ensure the safety on road traffic. Under the rules of treaty the requirement of driver has been made mandatory. It is provided that each moving vehicle shall have a driver and the vehicle must be controlled by the driver at all time.[16] In May 2014, the government of different countries who are the participatory members of the Vienna Convention have proposed an amendment to it. Consequently, the Article 8 of the Vienna Convention has been amended and a new paragraph has been added which provides that autonomous vehicles are allowed to have a driver who is not involved in driving and may remove his hand from driving wheel though he must be prepared to take over the control of vehicle if necessary.

CRASHES OF DRIVERLESS CARS

There are a few accidents of self driving cars. For example, a self-driving Uber in Tempe, Arizona, crashed in 2017. It is reported that the victim, 49 year old, Elaine Herzberg appears to have come "from the

15. Liability and Self Driving Cars, Dolman Law Group, (June 17, 2019, 11:15), https://www.dolmanlaw.com/liability-and-self-driving-cars/.
16. The United Nations, Vienna Convention on Road Traffic, 1968, Article 8.

shadows," stepping off the median into the roadway, and ending up in the path of the car while jaywalking across the street.[17] The vehicle was an SUV, and the accident caused the automobile to turn over on its side after the collision. The pedestrian, Elaine Herzberg was killed. It is believed that this was the first accident occurring in an automated vehicle that resulted in the death of a person because of the force of collision. The car was travelling at a speed of 38 miles per hour. On investigation it was found that the pedestrian could have been at fault.

In a separate incident of 2016, a Tesla operating in its unique autopilot mode in Florida collided with a tractor-trailer that turned left in front of the vehicle, which caused the death of the Tesla's operator. Before the accident occurred, the Tesla technology had allegedly been flashing a warning signal to its driver to disengage the autopilot setting of vehicle and take control of the vehicle.

ISSUES OF LIABILITY

Now the question is who will be responsible for the harm caused in accident to someone by a self-driving car? It may vary upon the technological level of the vehicle. If a driverless car is fully automated which operates on its own, without any presence or intervention of human driver present in car and falls into accident, it is most probable that the liability would fall on the manufacturer because the accident doesn't involve any human intervention at all. It may occur due to a failure in system developed by manufacturer. If the driverless car is semi-automated and while on trip in emergent situations requires some human intervention for controlling the car but due to failure of driver an accident has taken place, the driver may also be responsible for the harm.

The present legal system of any country does not provide appropriate legal framework to deal with the legal issues of accident caused by autonomous vehicles. Therefore, introduction of autonomous vehicle in market will pose a very crucial challenge for agencies involved in law making, interpreting and enforcing of law also. Professor Robert L. Rabin, Stanford University in his interview with Sharon Driscoll has discussed[18] the issues of liability related to crashes of driverless cars. Professor Rabin

17. Ian Bogost, Can You Sue a Robocar, The Atlantic,(June 17, 2019, 4:50 PM), https://www.theatlantic.com/technology/archive/2018/03/can-you-sue-a-robocar/556007/.
18. Uber-Self Driving Cars, Liability and Regulation by Robert L. Robin Q. & A. with Sharon Driscoll, (July 18, 2019 4:50 A.M.), https://law.stanford.edu/2018/03/20/uber-self-driving-cars-liability-regulation/ .

said that although he would have to know more about the details of the Tempe Uber crash to fully assess responsibility, but he believes that for fixing of liability, the principles of the Law of Tort may apply in case of accident. He pointed out three situations in which the principles of the Law of Tort are applicable.

1. If the driverless car was failed to note the presence of the pedestrian, the manufacturer of the vehicle may be responsible "under product liability principles".
2. If the pedestrian was crossing the road late at night and was unnoticed by darkness, she may be found to be at least partially at fault.
3. If her conduct caused the accident to be unavoidable, it is possible that she could be found fully responsible.

The possibility remains in the Tempe case that the automobile manufacturer, company which supplied any part of self-driving technology and driver who did not take over the control of vehicle before the crash occurred, could potentially be sued. In fixing the liability, the principles of the law of tort may be helpful and guiding norms but not sufficient to deal with the all legal issues. Therefore, for developing a coherent and appropriate legal framework to fix the liability, the measure issues related to liability are discussed under the following heads.

PRODUCT LIABILITY PRINCIPLE

The reason of accident by autonomous vehicle may be a defect of malfunctioning in the vehicle. Therefore, the accident caused by autonomous vehicle due to defect of malfunctioning in the vehicle will attract the product liability principles. Users or consumers of a product have expectations from manufacturers that the product is safe. A product is defective, if it does not provide the safety as expected by user. Any defect in the product may cause damage/imjury including physical, mental or property. The term "product liability" is not defined under any statute or Act in India[19] but it is generally understood as the liability of manufacturer, producer, and supplier of the product for the injury or damage caused due to defect in the product. So, in India, there is no specific law regarding product liability claim. Liability for defective product may be fixed under the provisions of Sales of Goods Act, 1930, The Consumer Protection Act, 1986, The Indian Contract Act, 1872, and Bureau of Indian Standard Act,

19. India: Product Liability 2019 (July 15, 2019, 3:20), https://iclg.com/practice-areas/product-liability-laws-and-regulations/india.

2016 etc. If any product does not fulfil the prescribed mandatory standard, the regulatory authority under BIS Act is empowered to stop the supply or sell of the product and also recall the defective product. As penal consequences, fine or imprisonment may also be imposed for non compliance of prescribed standard. Motor Vehicle Act, 1988 does not provide for recall of vehicle in India. The Voluntary Code of Vehicle Recall issued by the Society of Indian Automobile Manufacturer contains guidelines for voluntary recall of defective vehicles.

MANUFACTURER'S LIABILITY

It is argued by many scholars that with commercialisation of autonomous vehicles, the issue of liability will shift from drivers to manufactures because during trip, the control of vehicle has to be transferred from driver to the ADS technology. Generally, the negligence of driver is the legal basis of liability in road accident. While driving, if driver has acted negligently, he is liable for a damage caused by accident. Under the law, while driving, a driver of a vehicle is duty bound to excise his due care and attention to drive his vehicle. If accident involves two or more vehicles and drivers of both vehicles are negligent, for assessing the issue of liability, the concept of contributory negligence will apply. Therefore, in introducing the Automated Driving System, stakeholders are facing many legal as well as technical challenges. The first challenge is to ensure that the technology is completely secure. The automated driving system cannot be fully flawless and due to various reasons, it may cause accident. The system may fail to operate due to malfunctioning or defect in manufacturing of vehicle. The automated driving system will depend upon proper utilisation of the hardware as well as software technology. Use of software technology would be a very crucial and important part of the system. Obviously, two types manufacturers will be involved in introducing this system. First would be final product manufacturer and second would be software producer/provider. It is most probable that the accidents will cause not only, due to defect or malfunctioning of software but also due to a defect in the part of vehicle. Under traditional approach of traffic, the causes of accident may be human, technical, environmental conditions or a combination thereof. As the autonomous vehicle navigates itself and has to take critical decisions which can lead to an accident, the exact cause of accident may not be clear. However, all type of possible event cannot be classified. Sometimes, malfunctioning of software may be not responsible for the accident; it may happen due to damaged tyre. Now, it is clear from above discussion that in case of accident the responsibility for harm may be fixed upon the manufacturer of final product or software producer or both besides of owner sometime.

OWNER'S LIABILITY UNDER RULE OF STRICT LIABILITY

Initially, in the absence of specific legislation car owner may be responsible in case of accident. In law, a person may be held liable for some harm, even if he was not negligent in causing that harm or there was no intention to cause that harm. Sometimes, even it may happen that he tried his best to avert the same but failed and could still be made responsible under law. These are the situations when law has recognised the concept of No Fault Liability[20] known as rule of strict liability. In 1968, the House of Lords recognised this rule and laid down that even if the defendant was not negligent or rather, even if the defendant did not intentionally cause the harm or he was careful, he could still be made liable under the rule.[21] The owners are responsible for the damage caused by the vehicle though presently insurance companies are taking this responsibility for the second and third party obligation. But driver of a vehicle is duty bound to keep the fitness of vehicle updated one. In case of automated car, there is no driver rather only owner who cannot be held liable for the fault of the person commanding the car or for otherwise as vehicle operator have primary duty to check first and then command, and further to install necessary software updates and keep the vehicle maintained for its proper functioning. In case driver or owner of the driverless car makes modifications in the vehicle for the gain or in their personal interest which caused accident the principal of strict liability should be applicable on the both while legislating on the point.

LIABILITY UNDER THE CONCEPT OF RESPONDENT SUPERIOR

Respondent superior is a Latin maxim. It means that the superior or the principal be held liable. The concept of respondent superior puts the master in same position as he has done the act himself. If servant has committed a wrongful act and the same has been done in the course of his employment, under the law master is liable for the wrongful act. The wrongful act of the servant is deemed to be the act of the master. In traditional approach, the driver is considered to be the servant of owner and by applying the concept of respondent superior, for his wrongful act, the owner of the vehicle is liable for damages. Since, the autonomous vehicle eliminates the requirement of driver and the function of driver has to be replaced by the software technology and in this situation it is very difficult to establish the master and servant's relationship between the

20. *Ryland* Vs. *Fletcher,* (1868) L R. 3 HL 330.
21. Dr. R.K. Bangia, Law of Torts 320-321 (23rd ed. 2013).

owner and the software producer. Therefore, it seems that it would be very difficult to fix the responsibility upon the owner of the vehicle by applying the principle of respondent superior, for the default of the software producer who failed to prevent the accident. But in case of negligence on the part of owner or when he failed to update the software, his liability may arise.

LEGAL STATUS/PERSONHOOD OF AUTONOMOUS VEHICLE

Now the question arises as to whether the autonomous vehicle having capacity to operate itself? Can it be considered as a legal person...? According to Duhaime's Law Dictionary "person" is an entity recognized by the law as separate and independent, with legal rights and existence including the ability to sue and be sued, to sign contracts, to receive gifts, to appear in court either by themselves or by lawyer and, generally, other powers incidental to the full expression of the entity in law.[22] In law, a legal person has a real existence but its personality is fictitious. A fictitious thing is that which does not exist in fact but which is deemed to exit in the eye of law. Since autonomous vehicles do not have the status of legal person as on date by any of the law therefore in case of accident, autonomous vehicle itself cannot be responsible for the harm. Furthermore it seems in totality inappropriate being no jurisprudence behind through which driverless car may be hold responsible to be the bearer of ultimate liability. Actually, this needs fundamental changes in present legal propositions for the development of such jurisprudence which seems not realistic as any of the world country law does not support this as one date.

INSURER'S LIABILITY

Issue of liability for any damage caused by automated vehicle will definitely have an impact on the insurer of vehicle. For insurance industry, it will be a big challenge to fix the premium amount of such vehicles when they are introduced as the statistics is not available regarding their rate of accidents etc. The question will also arise as to how and in what manner the vehicle will get insured, the purchaser/owner or the manufacturer for the defects/shortcomings of the hardware/software or both or the network provider. The Autonomous Driving System (ADS) may lead a shift from driver's responsibility toward final manufacturers, software producers, network operators etc, then who will do the insurance and what will be the extent of that insurance as in present law of insurance it will be tough to

22. Duhaime's Law Dictionary, (19 July, 2019, 9:55 AM.), http://www.duhaime.org/LegalDictionary/P/Person.aspx.

find out the quantum of amount and liability when many stakeholders for one *uberrimaa fidel* contract. And the most technical part is the liability of the company when and that to against whom? This fact cannot be ignored that after accident of the driverless car it will be tough rather impossible to determine the cause behind the accident for fixing the responsibility. Therefore, the insurance industry will be required to adopt new model of policy, rules and regulations to address these emerging situations. A single insurance model may be developed to cover both the situations i.e. when driver is operating the vehicle or when he has activated driverless system.

ISSUE RELATED TO CYBER SECURITY AND CYBER TERRORISM

Autonomous vehicles may face the threat of cyber security at multiple points. Connection of cars to the internet and use of electronic devices can lead a potential threat of cyber security to the system. The system may be vulnerable to the cyber criminals and cyber terror. The cyber attackers may be able to access the vehicle and compel it for making a compromise. There are possibilities to use the automated vehicle for causing accidents intentionally. The remote hijacking of autonomous vehicles presents a very serious threat to ADS technology. Therefore, the software producers of such vehicles have to develop a proper cyber safety mechanism. It is very crucial for autonomous vehicles to be safe from hackers, viruses and malicious software. Since automated vehicle would be operated remotely, therefore it can be used to commit crime. Now, the question is that who will be responsible. Hijacking of autonomous vehicle will attract the criminal liability of hackers also. Therefore it is highly required that the law relating to cyber crimes be amended in such a way that the newly emerging cyber crimes related to autonomous vehicle are also incorporated within the purview of cyber crimes.

ISSUE RELATED TO PRIVACY AND SECURITY OF DATA

Mature and market ready network of autonomous vehicle will generate and broadcast personal data. The use and storage of personal data will raise a very complicated issue of privacy right. There are compelling reasons that the efficient working of autonomous vehicle will depend upon sharing and coordinating data to each other. There is a very strong possibility that the data-mining techniques will be able to reconstruct the personal information about to particular vehicle. This will raise legal controversies specifically the issue of privacy. The concerns related to privacy, may be divided into two categories. First is use and access of personal data by government agencies in public interest. Second is private or commercial use of personal data. For example, manufacturers may

create advertising profile by using the past travel record of individual vehicle. These issues are similar as already emerged by the use of personal data generated by cellular phones, GPS devices and internet etc. So, the law surrounding these issues is needed to be moulded or shaped properly.

HUMAN LESS RAILWAY CROSSING AND UNEXPECTED EVENTS AND LIABILITY

It is expected that the use of sensors, stereo cameras, short and long range RADAR combined with actuators, control units and integrated software will enable the vehicle to monitor and respond their surroundings timely and properly.[23] Thus, the system may able to respond properly at human less railway crossings also. But all of this will depend upon the degree of technological advancement. Now, it is clear that so many complicated situations of the road and traffic may be programmed in the system of autonomous vehicle, but the difficulty may arise in those situations for which the system of vehicle is not prepared. If someone jumps suddenly on the road, the vehicle will have to take a decision to hit or to save that one. If vehicle takes a decision to hit that person and causes harm to him, the question of liability will arise and will depend upon the facts and circumstances of the case.

VIOLATION OF ROAD SAFETY RULES

While driving on road, we have to follow the traffic rules properly. Violation of traffic rules attracts penalty upon driver or vehicle owner also. Manufacturers and software developers are required to develop such type of program and system which can comply with the laws regulating the traffic like over speeding and violation of traffic signals etc. If the system for compliance for traffic rules is incorporated in the vehicle but still the violation takes place the liability would shift from driver to manufacturer or software developer.[24]

---

23. Kpmg & Ctr. For Auto. Research, Self-Driving Cars: The Next Revolution (10) 2012, (July 10, 2019 10: 45 AM.) http://www.kpmg.com/US/en/IssuesAndInsights/Articles Publications/Documents/self-driving-cars-next-revolution.pdf.
24. Katrin Lillemae, The Legal Issues Regarding The Regulation of Autonomous Vehicles in The European Union, (June 12, 2019 11:55 PM), file:///C:/Documents%20and%20Settings/LAW/My%20Documents/Downloads/Juridilised+probleemid+seoses+autonoomsete+s%C3%B5idukite+reguleerimisega+Euroopa+Liidus.pdf.

WRONG COMMAND GIVEN BY DRIVER

Manufacturers have the responsibility to give proper instruction for operating the vehicle safely. Manufacturer has to ensure and secure that the system is free from any malfunction or defect. However, if the driver turns on the system negligently or violates the instructions of operating the system and accident takes place, the liability has to be fixed upon the driver for acting negligently.

CONCLUSION

Finally, it is concluded that the race for developing and introducing ADS technology has been started around the globe. So, with the development and innovations of technology we have also to update our legal system in such a way that the legal issues related to this technology may be resolved properly. Autonomous Driving System has great potential to improve the traffic management system, public safety and efficiency etc. The concern raised by the Union Minister of Transport and Highway that the technology will pose a threat to employment in India seems baseless. Just, opposite to this, success of Autonomous Driving System may create huge employment not only in India but all over the globe. Since, ADS technology is still at very young stage and success of it will depend upon the efficiency, reliability, trust of public in technology, cyber security, security of privacy and safety etc. For the commercial introduction of the driverless cars in India, infrastructure of roads and environment suitable for the technology will also have to be developed besides proper education and awareness of masses regarding their movement on roads. With the invention and commercialisation of autonomous vehicles, not only the driving will become more comfortable but we hope that the journeys will be safer and less time consuming.

* * *

ISBN : 978-81-931981-0-0
UGC Approved Journal

Regd. No. F. 2/1/6/Press/83
No. 41332

OFFICE BEARERS AND MEMBERS OF THE BAR COUNCIL OF INDIA

Shri Manan Kumar Mishra, *Senior Advocate* *Chairman, BCI*	Bihar
Shri Satish Abarao Deshmukh, *Advocate* *Vice-Chairman, BCI*	Maharashtra & Goa
Shri Apurba Kumar Sharma, *Senior Advocate* *Chairman, EC, BCI*	Assam, Nagaland, Meghalaya, etc.
Shri Debi Prasad Dhal, *Senior Advocate* *Managing Trustee, BCIT & Member, BCI*	Odisha
Shri N. Manoj Kumar, *Advocate* *Vice-Chairman, EC, BCI*	Kerala
Shri A. Rami Reddy *Associate Managing Trustee, BCIT* *Member, BCI*	Andhra Pradesh
Shri K. K. Venugopal, *Ex-officio Member* *Attorney General of India*	Ex-officio
Shri Tushar Mehta, *Ex-officio Member* *Solicitor General of India*	Ex-officio
Shri Ashok Kumar Deb, *Advocate, MLA* *Co-Chairman, BCI*	West Bengal
Shri S. Prabakaran, *Senior Advocate* *Co-Chairman, BCI*	Tamil Nadu
Shri Y. R. Sadasiva Reddy, *Senior Advocate* *Co-Chairman, BCI*	Karnataka
Shri Shailendra Dubey, *Advocate* *Member, BCI*	Chhattisgarh
Shri Ved Prakash Sharma, *Advocate* *Co-Chairman, BCI*	Delhi
Shri Prashant Kumar Singh, *Member, BCI* *Chairman, C-ordination Committee of State Bar Councils*	Jharkhand
Shri Suresh Chandra Shrimali *Co-Chairman, BCI*	Rajasthan
Shri Dilip K. Patel, *Member, BCI* *Chairman, Advocates Welfare Committee*	Gujarat
Shri Sunil Gupta, *Member, BCI*	Madhya Pradesh
Shri Partap Singh, *Advacate, Member, BCI* *Chairman, Overseas Committee*	Punjab & Haryana
Shri Vishnuvardhana Reddy, *Advacate, Member, BCI* *Chairman, Rules Committee*	Telangana
Shri Desh Raj Sharma, *Advacate, Member, BCI* *Chairman, Seminar Symposium Committee*	Himachal Pradesh
Shri Shreenath Tripathi, *Advacate, Member, BCI*	Uttar Pradesh
Shri Devender Kumar Sharma, *Sr. Advacate, Member, BCI*	Uttarakhand
Shri Srimanto Sen	*Secretary, BCI*
Shri J.R. Sharma	*Addll. Secretary, BCI*
Shri Ashok Kumar Pandey	*Joint Secretary, BCI*
Shri C.S. Kandpal	*Secretary Incharge, BCIT*