

## ARTICLES

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### **A PERSON SUBJECT TO CRIMINAL LIABILITY FOR VIOLATION OF TRANSPORT SECURITY USING ARTIFICIAL INTELLIGENCE TECHNOLOGIES<sup>1</sup>**

DOI 10.30729/2541-8823-2021-6-3-166-183.

**Abstract.** *Modern technologies used in the creation of various types of vehicles significantly change the idea of the functions of the person responsible for ensuring transport security. Artificial intelligence integrated into the vehicle control system has already greatly simplified the tasks that the driver of a car, train, aircraft and other mechanical vehicles solves.*

*Unmanned vehicles in the future will not need a driver at all, since it will be completely replaced by an intelligent control system. But neither domestic nor foreign manufacturers of high-tech vehicles guarantee the complete safety of the operation of the latter. On the contrary, according to available forecasts, the number of transport accidents will increase as the number of drones in operation increases. This will require determining the person held liable for a violation of transport security committed through the use of unmanned vehicles.*

*The object of the present study is the social relations that arise when determining a person who is subject to criminal liability for violating the rules of safe movement and operation of unmanned vehicles. The purpose of the work is to establish legally*

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<sup>1</sup> The reported study was funded by RFBR and Yamal-Nenets Autonomous Okrug, project number 19-49-890002): "The Limits of Humanization of Punishments in Northern (Arctic) Penitentiary Institutions: Modern and Contemporary History".

*significant signs of a person who is recognized as the subject of the relevant elements of transport crimes.*

*The research methodology is represented by a combination of general scientific and particular scientific methods of cognition, namely: dialectical, comparative legal, formal logical, as well as survey and content analysis methods. All of the above methods were used in the study of materials and empirical data obtained in the process of preparing this work.*

*The research materials represent a set of the following official, scientific, empirical and other data: 1) statistical indicators and analytical reviews of the pace of development of the digital economy; 2) a set of provisions of normative acts of international and national law that regulate public relations in the field of artificial intelligence and the possibilities of using this technology in the production of highly automated vehicles; 3) the results of criminal law research on the problem of the subject of transport crimes committed using drones; 4) data obtained in the course of surveys of heads of IT companies that are residents of the Skolkovo Innovation Center; 5) other materials related to the subject of the study.*

*Based on the results of the study, conclusions were formulated about the current lack of a need for a radical revision of approaches to the definition of legally significant signs of a special subject of a transport crime. Modern “unmanned” vehicles do not yet have an automated control system that would completely eliminate the need for direct or remote presence of the driver in order to control the movement process. Therefore, the obligation to comply with the relevant rules still rests with the driver - an individual who is responsible for criminal offenses against transport safety. This conclusion is also based on criticism of the results of the latest studies, the authors of which insist on the need to extend responsibility for these socially dangerous acts both to drivers and to: 1) developers of software for unmanned vehicles and elements of high-tech transport infrastructure, 2) owners of highly automated vehicles, 3) vehicles with artificial intelligence technology integrated into the control system.*

**Keywords:** *transport security, special subject of a transport crime, criminal liability, highly automated vehicle, artificial intelligence technologies in the field of transport, a source of increased danger.*

## **Introduction**

Domestic criminal law doctrine, as well as investigative and judicial practice, recognizes as the subject of a transport crime only an individual who has reached the age determined by criminal law, who at the time of committing the crime consciously drives a vehicle. “Awareness” in this case not only states the fact of

the sanity of the said person, but also indicates that he has an unlimited ability to control the movement of the vehicle in which he is located. In this regard, drivers and driver-instructors are brought to criminal liability for committing transport crimes, first.

A significant increase in the manufacturability of modern vehicles leads to the elimination of the need for direct and even indirect (in the future) human participation in driving a vehicle. In this regard, a person is already now becoming not a direct driver, but an operator driving a vehicle at a distance. In the near future, technological progress will ensure the movement of a vehicle completely uncontrolled by a person. The artificial intelligence technology introduced into the control system will determine the required route, promptly solve problems to eliminate emergency situations that arise during the movement: overcoming obstacles, actions in an emergency, an unforeseen threat of causing physical harm and (or) property damage, etc.

But the removal of a person from the process of driving a highly automated vehicle (hereinafter referred to as HAV) by no means excludes all the listed negative consequences of a violation of transport security: from material damage to disasters accompanied by the death of several persons. Under these conditions, the question inevitably arises of establishing the culprit for subsequent prosecution for committing a transport crime.

The legislation of various states ambiguously resolves the issue of criminal liability of a person for committing socially dangerous acts, in which the direct cause of physical harm or property damage is the activity of high-tech means and other sources of increased danger. However, none of the proposed options for the implementation of criminal law in such cases does not meet the requirements of domestic law regarding the rules for qualifying crimes in the process of establishing the basis for criminal liability (Article 8 of the Criminal Code).

The solution of the issue of responsibility for the commission of a transport crime using “drones” is currently highly relevant. The presence of this gap in both domestic and international law creates legal obstacles to the development of high-tech transport and its use to increase the welfare of the population and increase the level of comfort of life on the territory of any state. In addition, the lack of legal opportunities to implement responsibility for transport crimes committed using HAV leads to impunity, which in turn creates conditions for the growth of crime in the development and use of high technologies.

The study of the currently emerging public relations in the field of the use of HAV involves the establishment of legally significant signs of a person who is held criminally liable for committing encroachments on transport security. To achieve this goal, it is necessary to consistently solve the tasks of: 1) determining the prospects for the development of HAV and their use in the national and

international transport system, 2) assessing the state of legal regulation of the use of “Artificial Intelligence” technology in the creation of unmanned vehicles and their subsequent use, 3) identification of a person (persons) subject to criminal liability for harm caused in the course of the activities of the HAV.

### **Methodology**

The achievement of the set goal and the successful solution of the listed tasks are ensured by the balanced use of general and particular methods of scientific research. Thus, the dialectical method and the deduction method were used throughout the entire study, including when formulating the rationale for conclusions and proposals for determining the subject of criminal liability in the composition of transport crimes that are committed using HAV. To ensure the sufficiency of the empirical base, the method of interviewing representatives of Russian companies-residents of the Skolkovo Innovation Center, which develop products using artificial intelligence technologies, was used. When identifying a gap in the legal definition of the subject of a transport crime using the HAV, the method of content analysis of the relevant norms of the Russian criminal law was used. Finally, the comparative legal method was used in the study and comparison of the content of the provisions of domestic, foreign and international law on the use of artificial intelligence technologies in the field of transport, as well as on liability for causing harm by technical means that operate without the direct participation of a person or control on his part.

### **Research**

The creation and study of the possibilities for the safe use of HAV are varieties of a larger technological phenomenon of the modern world — artificial intelligence. It is impossible to overestimate the importance of this technology for mankind, since many states are currently considering national leadership in the field of artificial intelligence as a means of ensuring not only economic, but also national security in general.

Thus, the President of Russia said that a state-monopoly in the field of artificial intelligence can become the ruler of the world<sup>1</sup>. Presidential Executive Order No. 13859 of February 11, 2019 states: “Artificial intelligence promises to stimulate the growth of the United States economy, strengthen our economic

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<sup>1</sup> Putin: a monopolist in the field of artificial intelligence can become the ruler of the world / The President of Russia set the task of significantly increasing funding for scientific research in the field of artificial intelligence [Electronic resource] // URL: <https://tass.ru/ekonomika/6489864> (date of access: 31.07. 2021).

and national security, and improve our quality of life. ... America's continued leadership in artificial intelligence is paramount to maintaining the economic and national security of the United States and shaping the global evolution of artificial intelligence in alignment with our nation's values, policies, and priorities”<sup>1</sup>. The PRC authorities indicate that the “Artificial Intelligence” technology until 2030 inclusive will be considered as the main direction of the national economy, which allows China to gain unique advantages “when conquering new markets in the global division of labor”<sup>2</sup>.

These and other statements by politicians from various countries about the importance of the development and widespread introduction of artificial intelligence are fully consistent with the indicators of the annual growth of financial investments in those companies that develop artificial intelligence technologies for various sectors of the economy. According to the AI Index Report 2021, prepared by representatives of Stanford University, the total investment in artificial intelligence technologies in 2020 amounted to 67.9 billion US dollars, which is 40% more than in 2019<sup>3</sup>. A multiple increase in the income of companies operating in the segment of artificial intelligence is also predicted<sup>4</sup>. Given these facts, it can be assumed that artificial intelligence technologies will become a predetermining direction not only for the economic, but also for the political development of the major powers of the world community. On the contrary, a lag in the field of artificial intelligence will create a threat of at least the economic dependence of an outsider state on countries supplying these technologies.

### *Artificial intelligence and transport law*

Despite the universality of the application of artificial intelligence technology, at present it has received the greatest demand in several sectors of the economy, including in the field of transport. It is predicted that already in 2022, sales of vehicles, the movement of which is provided by various automated control systems,

<sup>1</sup> Maintaining American Leadership in Artificial Intelligence / A Presidential Document by the Executive Office of the President on 02/14/2019 [Электронный ресурс] // URL: <https://www.federalregister.gov/documents/2019/02/14/2019-02544/maintaining-american-leadership-in-artificial-intelligence> (дата обращения: 31.07.2021).

<sup>2</sup> Kovacic L. Chinese experience in the development of the artificial intelligence industry: a strategic approach / Carnegie Moscow Center [Electronic resource] // URL: <https://carnegieendowment.org/2020/07/07/en-pub-82172> (accessed: 07/31/2021).

<sup>3</sup> The volume of investment in artificial intelligence technologies has reached almost \$68 billion [Electronic resource] // URL: <https://tass.ru/ekonomika/10835935> (date of access: 07/31/2021).

<sup>4</sup> Aksenova E.I. Expert review of the development of artificial intelligence technologies in Russia and the world. Selection of priority areas for the development of artificial intelligence in Russia. M.: SBI “RIHOMM MCHD”, 2019. 38 p.

in the USA, the European Union and Japan will exceed half of all vehicle sales, which will significantly change the entire transport infrastructure in the near future. Tentatively, by 2030, unmanned trucks and cars, as well as aircraft, will completely renew the fleet of modern vehicles<sup>1</sup>.

The technical improvement of vehicles, which will lead to the absence of the need for direct control by a person, does not guarantee the safety of such automated operation. Disasters that are already happening<sup>2</sup> and, unfortunately, will become more frequent in proportion to the increase in the number of operated “drones”. For this reason, there is a need to revise the regulations that not only regulate the features of the production and operation of the HAV, but also determine the basis and conditions for criminal liability of persons who have violated traffic safety and operation of transport through the use of the HAV.

High-quality regulatory and legal regulation and proper protection of relations in the field of traffic safety and operation of unmanned vehicles will provide society with an understanding of the rules for the creation and limits of the use of HAV. Of course, at present, the need for relevant regulations is quite high. But the current legislation of both Russia and foreign countries does not yet offer any solutions in this regard, which leaves an obvious legal gap regarding the creation and use of these new generation vehicles. At the same time, both in international law and in domestic legislation, there is a tendency to establish basic principles and humanitarian principles (priorities) for the use of artificial intelligence in any field of human activity. Based on this, we can conclude that the formation of the legal basis for the use of artificial intelligence technologies, as well as determining the legal status of the subject of liability for harm caused by the activity of a technical device with artificial intelligence.

The main source of international law, which determines the principles of road traffic of motor vehicles, is the Vienna Convention of 08.11.1968 “On Road Traffic”. On its basis, the Rules of the road and the operation of vehicles have been developed in many states, but for objective reasons, the Convention does not provide for the specifics of the use of HAV, as well as the requirements for the transport infrastructure that ensures their safe operation.

Meanwhile, the international community has high hopes for the development of artificial intelligence technologies used in the field of transport. Thus, following the results of the Conference “Human Rights in the Age of Artificial Intelligence:

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<sup>1</sup> *Aksenova E.I.* Expert review of the development of artificial intelligence technologies in Russia and the world. Selection of priority areas for the development of artificial intelligence in Russia. M.: SBI “RIHOMM MCHD”, 2019. 38 p.

<sup>2</sup> *Begishev I.R., Khisamova Z.I.* Artificial intelligence and criminal law: monograph. M.: Prospekt, 2021. 192 p.

Europe as a Creator of International Standards in the Field of Artificial Intelligence” (Berlin, January 20, 2021), a resolution was adopted, according to which artificial intelligence is recognized as a universal opportunity for human development, and society (paragraph 1). The conference participants recognized the need to develop a legal framework that forms the basis for any application of artificial intelligence (paragraph 7). The conference participants did not make any special statements on the use of artificial intelligence technologies in the automotive industry and transport infrastructure.

Domestic legislation also does not have detailed mechanisms for the legal regulation of the production and operation of HAV. Nevertheless, it compares favorably with both international law and the law of many foreign countries by establishing basic concepts and fragmentary regulation of the features of the use of HAV, their differentiation according to the degree of autonomy of control while moving along a given route, as well as the development of directions for resolving issues of safe operation unmanned vehicles, including cars with artificial intelligence.

Thus, Federal Law No. 462-FZ of December 30, 2015, amended the Air Code of the Russian Federation (clause 5, article 32), in accordance with which the category “unmanned aircraft” was defined — an aircraft controlled in flight by a pilot who is outside board of such aircraft (remote pilot). So far, this is the only official definition of a vehicle that is controlled from a distance. Of course, the identification of the concepts “unmanned vehicle”, “HAV” and “a vehicle controlled by artificial intelligence technologies” is unacceptable. But the undeniable significance of the above definition contained in paragraph 5 of Art. 32 of the Air Code of the Russian Federation, consists in designating legal features that seem to be characteristic of all the listed types of vehicles, namely:

1. the vehicle is driven. From the beginning to the end of its journey, the vehicle is under the control of the driver, and therefore cannot make independent decisions regarding the choice of speed mode, control features and other essential driving conditions;
2. the presence of the driver during the movement is mandatory. In this regard, the recognition of a vehicle as “unmanned” is purely formal, since it indicates only a feature of remote control, which implies the absence of a driver directly on board an aircraft, car, etc., moving along a given route.

Legislatively fixed signs of a “drone” are also of great importance for the subsequent identification of a person liable for damage to objects of criminal law protection caused as a result of accidents (crashes, collisions, etc.) of unmanned and other HAVs. The legislator currently does not leave the possibility of recognizing an unmanned aircraft (it seems that any HAV) as a subject of legal liability, since human control over the vehicle is presumed throughout the entire flight.



Several by-laws have also been adopted, which form the basis of sources of domestic transport law. The main one is the Strategy for the Development of the Automotive Industry until 2025 (approved by Decree of the Government of the Russian Federation of April 28, 2018 No. 831-r). In accordance with this document, new types of high-tech products of the domestic automotive industry are of critical importance in the medium term. Artificial intelligence technologies are recognized as one of the main areas for improving these vehicles. The use of artificial intelligence in the automotive industry involves the creation of an unmanned vehicle. The strategy forms an integrated approach, which consists in creating not only unmanned vehicles, but also the corresponding road and telecommunications infrastructure that provides HAV with the necessary services and information. All this suggests that in the near future a new transport infrastructure will be created in Russia or the existing transport infrastructure will be significantly modernized, providing the widest possible use of unmanned vehicles and other HAVs.

In terms of technological and other features of unmanned vehicles, the Strategy determines that in reality they do not imply the absence of a driver in the vehicle cabin while driving (an exception is autonomous unmanned vehicles of levels 4 and 5). The car will already correspond to the type of “unmanned” vehicles if it has “driver assistance systems”. Such systems are integrated into additional equipment installed on the vehicle: cameras, radars, vision components, robotic steering systems, braking systems, etc. Thus, the control of “unmanned” vehicles, which will be put into operation in the short and medium term, will continue to be carried out by the driver, who is in the car and controls the movement process.

Special attention in the Strategy is paid to the prospects for the development of legal regulation of the use of unmanned vehicles. In particular, the following are cited as possible regulatory measures:

1. development of standards, operation of unmanned vehicles;
2. determination of the responsibility of the operator, whose actions affect the process of driving the specified vehicle;
3. determination of responsibility for a traffic accident and its consequences of a manufacturer of autonomous unmanned vehicles of levels 4 and 5, as well as persons using these vehicles.

Considering the foregoing, it can be assumed that in the near future the legislator will have to address the issue of expanding the range of subjects of transport crimes and (or) propose fundamentally new solutions on the application of measures of legal liability for harm caused to public relations protected by criminal law as a result of the use of an unmanned vehicle or other HAV.



In part, promising directions for solving these issues are defined in the Decree of the Government of the Russian Federation dated November 26, 2018 No. 1415 “On conducting an experiment on trial operation of highly automated vehicles on public roads”. This project to test HAV on public roads is being carried out from 12/01/2018 to 03/01/2022 on the territory of 11 constituent entities of Russia. Despite the experimental nature of the use of HAV on public roads, the Decree of November 26, 2018, in sufficient detail for a by-law normative act, legally significant signs of persons directly involved in the experiment and potentially responsible for the harm caused as a result of an accident or a car accident are recorded (paragraph 3, 18 of the Decree).

So, in paragraph 3 of the said Decree, the basic concepts are given, including the owner and driver of the HAV. The first can only be represented by the legal entity that owns the HAV involved in the experiment. The driver is characterized by the following legally significant features:

1. is a natural person;
2. is located in the driver's seat of the vehicle;
3. activates the HAV automated driving system;
4. controls the movement of HAV;
5. if necessary, switches the HAV control to manual mode.

The legal status of the driver who participates in the experiment does not imply fundamental differences from the duties assigned to the driver of the vehicle in accordance with Decree of the Government of the Russian Federation of October 23, 1993 No. 1090 (as amended and supplemented) “On the rules of the road.” Considering that the legal entity — the owner of HAV, in accordance with the current legislation, cannot be held criminally liable, the driver of this vehicle is still the only person who has all the signs of the subject of the relevant crimes.

Obviously, on the basis of the results of the experiment already obtained, the Government of the Russian Federation, by order of March 25, 2020 No. 724-r, approved the Concept for ensuring road safety with the participation of unmanned vehicles on public roads. Of course, one of the key goals of implementing this Concept is to ensure road safety and create a safe transport environment, and “reducing the role of the human factor” is recognized as a means of achieving it. This statement, fixed in the program regulation, clearly indicates that, regardless of the results of the tests, unmanned vehicles equipped with artificial intelligence technology (4 and 5 levels of automation) will replace traditional cars (1–3 levels of automation) from the transport infrastructure, control which involves the direct participation of a person. This again puts before the legislator the question of revising the status of a person guilty of a transport crime. Attention is also drawn to this in the Concept: “it is necessary to provide for the differentiation of the level

of responsibility of road users depending *on the level of autonomy* (author's italics) of vehicles.”

Pointing to possible options for determining the sources of threat to transport security, formed using highly automated systems and high-tech tools, as well as the persons responsible for the corresponding socially dangerous encroachments, the authors of the Concept indirectly indicate possible directions for solving these problems. In particular, the Concept states: “The right of independent decision-making by an automated driving system may be limited in the case established by law, if there is an appropriate technical capability on the part of the intelligent transport system”. Attention is also drawn to the need to ensure the information security of HAV and the security of all components of the transport infrastructure from possible cyberattacks. Thus, with a literal interpretation of the above provisions of the Concept under consideration, one cannot exclude in the future the possibility of recognizing as the subject of transport crimes not only individuals involved in the direct or indirect management of HAV, but also persons ensuring the information security of HAV, serving high-tech transport infrastructure facilities, with the help of which the moving HAV is oriented in space. Moreover, pointing to the “right to make a decision” belonging to the “automated driving system”, which can be limited “in the case established by law”, one cannot exclude the option of implementing criminal quasi-responsibility. It can apply both to the legal entity — the owner of HAV, and to HAV itself, since the “right to make decisions” must correspond to the obligation to bear responsibility for the actions or omissions performed.

One of the first examples of the regulatory implementation of the installations provided for in the previously mentioned program documents is the National Standard of the Russian Federation approved by Order No. 135-st of March 11, 2021 of Federal Agency for Technical Regulation and Metrology. Means of monitoring the conduct and predicting people's intentions. Hardware and software using artificial intelligence technologies for wheeled vehicles. Classification, purpose, composition, and characteristics of photo and video recording means. The standard was developed by Yandex Taxi LLC and is intended for use in mass production of wheeled vehicles equipped with hardware and software using artificial intelligence technologies. However, in reality, the requirements of the Standard refer exclusively to equipment that allows you to predict the behavior of the driver of the vehicle, as well as provide him with information support while driving to prevent violations of traffic safety rules, death of people, destruction of property, environmental damage. For this reason, the Standard does not apply to HAVs that are or can be controlled without the direct participation of an individual driver.

***Person subject to criminal liability for harm caused  
by HAV activities***

Domestic investigative and judicial practice does not yet know cases of convicting persons who were not directly in the car and did not drive it at the time of the traffic accident. But the facts when HAV, which is controlled using artificial intelligence technologies, causes death to a person, unfortunately, are no longer isolated. The first accident involving an unmanned vehicle occurred on May 7, 2016 in Williston (North Dakota, USA). The unmanned control system of the Tesla Model S car was unable to identify a long truck turning around as an obstacle. As a result of the collision, a passenger who was in HAV was killed<sup>1</sup>. In 2018, an Uber Technologies Inc self-driving car collided with a pedestrian in one of the cities in Arizona (USA). The victim died from her injuries. During the investigation of this incident, it was established that, in accordance with the software used to manage HAV, this situation was normal<sup>2</sup>.

It is thought that the number of accidents involving HAVs will only increase as the number of such vehicles on public highways increases. The same can be said about other types of unmanned vehicles. It is possible that by eliminating completely or significantly reducing the “human factor”, the movement of high-tech transport units will indeed become safer, but the complete elimination of accidents and disasters is unlikely to be possible.

Some researchers, not without reason, state that the root cause of modern accidents caused by the failure of technical systems is not only the incompetence of users, but also design flaws in both software and finished high-tech products. Their low quality is explained in the scientific literature mainly by two reasons: firstly, these are global trends to increase the speed of development and placement on the market of a fundamentally new product in order to obtain economic advantages over competitors. Therefore, a finished high-tech product is often modified by the manufacturer in the course of warranty service, and not as part of testing prior to mass production. Given the insignificant “life cycle” of many high-tech products, which is determined by a period of 2–3 years, such an approach to production is more adapted to modern market relations.

Secondly, modern high-tech products are the result of complex production. Each component of a technically complex product is developed, and possibly produced, by various business entities. As a rule, there is no single developer who represents the project as a whole and exercises control at all stages of the production

<sup>1</sup> Killer robots. 10 real cases [Electronic resource] // URL: <https://vseonauke.com/1856429379365636698/roboty-ubijtsy-10-realnyh-sluchaev/> (11.08.2021).

<sup>2</sup> Begishev I.R., Khisamova Z.I. Artificial intelligence and criminal law: monograph. M.: Prospekt, 2021. 192 p.

process. The lack of understanding of the overall goal of the project, at least at the level of the “functional diagram”, significantly increases the risk of hidden flaws, which are revealed during the operation of the finished product<sup>1</sup>.

It is well known that in order to implement criminal liability, it is required to identify a specific person who is guilty of a crime. Compositions of socially dangerous encroachments on transport security are no exception to this rule. Taking into account the provisions of the current regulatory acts of strategic importance, in conjunction with the existing features of the production and operation of high-tech products that combine not only design solutions, but also complex software, it becomes obvious that it is impossible to use the traditional algorithm for determining the subject of a transport crime in cases where an accident or catastrophe occurs with the participation of drones and other HAV. Based on the analysis of possible options for the development of a causal relationship, I believe that the circle of subjects of criminal liability can hypothetically be represented by the following persons:

- the driver on board the HAV, who, in the event of a threat of a traffic accident, is obliged to transfer the vehicle to manual control and prevent damage to objects of criminal law protection;
- a driver who controls HAV remotely;
- owner of HAV;
- HAV manufacturer;
- developer of artificial intelligence technology and other software embedded in the HAV control system;
- a person who has made unauthorized changes to the HAV software and (or) information and telecommunication means of the transport infrastructure.

In the theory of criminal law, various opinions have been expressed regarding the solution of this problem. So, A. I. Korobeev and A. I. Chuchaev believe that persons with special legally significant features can be recognized as the subject of a transport crime committed using an unmanned vehicle. These authors include: a) software developers — “personalized developers”, “a specific computer program”, for a “specific unmanned vehicle”; b) persons supervising the safe operation of the programs specified in paragraph 1; c) owners of unmanned vehicles, who are responsible for monitoring the safe operating conditions of these vehicles; d) persons directly in the unmanned vehicle and exercising control over the safety of its operation<sup>2</sup>.

<sup>1</sup> Kovalev V. “Why equipment breaks”, or what is the forgotten concept of “reliability” // Components and technologies. 2008. No. 4. pp. 19–22.

<sup>2</sup> Korobeev A.I., Chuchaev A.I. Unmanned vehicles equipped with artificial intelligence systems: problems of legal regulation // Asia-Pacific region: economics, politics and law. 2018. No 3. pp. 117–132.

Arguing about the subject of the *corpus delicti* of a transport crime committed in the conditions of operation of HAV, I. N. Mosechkin believes that, depending on the actual circumstances of the incident, it will be possible to recognize as such: 1) a software manufacturer acting intentionally or through negligence, if the corresponding program made an incorrect decision as a result of which harm is caused to public relations protected by criminal law; 2) the manufacturer or seller of HAV equipped with artificial intelligence, provided that they are aware of the presence of technical, software and other defects in the produced / sold vehicle; 3) driver, operator and other user of HAV, but taking into account the degree of automation of the vehicle; 4) “other persons” carrying out unauthorized interference with the operation of the HAV software<sup>1</sup>.

Without differentiating legal liability for harm caused by “robots with artificial intelligence”, V. A. Laptev proposes a solution to this problem, taking into account the degree of dependence of the actions of the robot on the person. On this basis, the author identifies three stages in the formation of responsibility, namely: 1) the operator or manufacturer is responsible for the actions of the robot (short term); 2) the manufacturer will bear subsidiary liability together with the robot whose actions caused harm (medium term, which is characterized by giving the robot legal personality); 3) the robot will bear “cyber-physical legal responsibility” for its actions, which will perform both regulatory and protective functions (long-term perspective)<sup>2</sup>.

Some researchers more radically raise the issue of responsibility for causing harm resulting from an accident or other emergency with an unmanned vehicle. For example, Hin-Yan Liu, in one of his scientific works, asks about the fundamental possibility in such cases to talk about both criminal and other types of liability. Describing responsibility as an inevitable reaction of society and the state to causing harm from an action that is performed in the conditions of the subject's freedom of choice, the author draws attention to the fact that in these situations such freedom is excluded. There is no person who performs the functions of a traditional driver when driving an unmanned vehicle, and the programmer who developed digital software for unmanned vehicle control, for objective reasons, is deprived of the opportunity to influence the operation of the software when driving HAV. The idea of recognizing an unmanned vehicle as a subject of responsibility is perceived critically, since the latter acted in accordance with the legalized traffic algorithms that were previously written in

<sup>1</sup> Mosechkin I.N. Artificial intelligence in criminal law: prospects for improving protection and regulation: monograph. Kirov: Vyatka State University, 2020. 111 p.

<sup>2</sup> Laptev V.A. The concept of artificial intelligence and legal responsibility for its work // Law. Journal of the Higher School of Economics. 2019. No 2. pp. 79–102.

the onboard software. Consequently, the actions of HAV that caused harm cannot be considered illegal. All this leads to the need to come to terms with the idea of the inevitability of accidents and disasters involving HAV, for which no one can be held accountable<sup>1</sup>.

Thus, the opinions of scientists about the subject of responsibility for transport crimes, the means of committing which is HAV and (or) artificial intelligence, differ significantly. It is currently impossible to obtain empirical data on this subject of research, since domestic investigative and judicial practice does not yet have precedents in determining the person liable for a transport crime committed in the conditions of using a high-tech car or other vehicle (unmanned) vehicle. Therefore, to solve this problem, it will be useful to know the opinion of representatives of enterprises that develop high technologies and their introduction into the production sector.

Thus, top managers of resident companies of the Skolkovo Innovation Center see differently the possibilities of exercising liability for harm caused by technical means, the actions of which are determined by artificial intelligence technologies. Head of Skolkovo Technopark S. F. Poplavsky believes that technical means capable of carrying out “intellectual activity”, which is based on predictive analytics (analytics, the result of which is an indication of events that will occur in the future), are in principle not capable of performing actions beyond the control of a person. These neural network technical means and devices are not self-learning, and therefore offer final solutions based on predictive analysis only in accordance with the rules and algorithms prescribed in the software that is used when working with input data<sup>2</sup>. Thus, machine learning is based on the use of various sections of Data Science, and a “smart” technical device make a decision as it was trained by DataScientists, that is, developers of special software. Hence, according to S. F. Poplavsky, it is incorrect to raise the question of assigning responsibility for actions performed by an inanimate high-tech tool. For causing harm by the actions of the latter, only the person — the author of the specialized software — should be held liable.

This opinion, in general, is shared by the General Director of ANP Ceges Technology G. S. Tsedilkin, who manages developments in the field of “Digital

<sup>1</sup> *Liu Hin Yan*. Irresponsibilities, inequalities and injustice for autonomous vehicles. Ethics and Information Technology. 2017 [Electronic resource] // URL: [https://www.researchgate.net/publication/319239390\\_Irresponsibilities\\_inequalities\\_and\\_injustice\\_for\\_autonomous\\_vehicles](https://www.researchgate.net/publication/319239390_Irresponsibilities_inequalities_and_injustice_for_autonomous_vehicles) (Accessed 08/21/2021).

<sup>2</sup> *Boyarkin A.* Predictive analytics: benefits, tools and examples [Electronic resource] // URL <https://sales-generator.ru/blog/prediktivnaya-analitika/#3> (Accessed: 21.08.2021); *Bruskin S. N.* Models and tools of predictive analytics for a digital corporation // *Vestnik REU im. G. V. Plekhanov*. 2017. No. 5. pp. 135–139.

Vision” and the provision of comprehensive information security services. A neural network integrated into any technical device is currently a new algorithm (means) that provides decision-making, the prediction of which becomes possible based on the information received by the specified device. In this regard, we can conclude that “the machine makes a decision, but does not think.” Therefore, in the event of harm resulting from the use of a high-tech tool, the responsibility for the onset of negative consequences should be borne by the manufacturer, who violated the safety rules during the production process and (or) did not exclude all negative scenarios during the operation of his products.

S. Yu. Sorokin, General Director of Intellogic LLC, sees the solution to this problem somewhat differently. Sorokin. Medical products manufactured by the company can only be used if a Registration Certificate of the Federal Service for Surveillance in Healthcare is obtained. Obtaining official documents, on the basis of which a high-tech product, including software, is recognized as safe for use in accordance with the declared purpose, removes the manufacturer's responsibility for harm that in reality can be caused not as a result of using a medical product for which a registration has been received certificate, but as a result of improper handling of this product by an employee of a medical institution. In this regard, the responsibility for such harm should be assigned solely to the user of high-tech products who have passed all the necessary procedures for admission to operation.

Finally, according to the General Director of the companies “OKB” ATM Cargo Drones “and” Hoversurf “A. V. Atamanov, liability for damage caused by the use of a vehicle equipped with artificial intelligence technologies should be equally borne by both the manufacturer and the operator. In each specific case, it is necessary to establish not only the fact of harm, but also the reason for the accident or catastrophe. In modern conditions of production and operation of unmanned vehicles, it is quite possible to establish not only the cause, but also specific persons who manufactured the corresponding HAV unit or wrote a certain piece of software, the failure of which led to serious consequences. Similarly, it is possible to establish the guilt of the user of an unmanned vehicle if the accident occurred as a result of violation of the rules of operation by him. Taking into account the severity of the consequences, criminal liability, under certain conditions, can be extended not only to an individual, but also to the HAV development company as a whole.

## **Results**

Based on the results of the study, it turned out to be impossible to establish not only a generally accepted or shared by most researchers opinion about a person who is liable for a transport crime committed using HAV, but even to accurately



determine the direction that Russian and foreign legislators will take when solving the problem of liability for negative results activities of artificial intelligence in the field of transport. Predicting the best solution to this problem is currently quite difficult, since unmanned vehicles, as well as other HAV controlled using artificial intelligence technology, are still being operated only in an experimental format.

And yet today it is required to determine the legal features of the subject of a transport crime of the future, at least to indicate the limits of responsibility of persons whose lack of professionalism can jeopardize transport security. I think that a fundamental revision of the approach to determining the subject of a transport crime committed using an unmanned or other high-tech vehicle will not be required either now or in the near future.

First, in accordance with the official five-level classification of all automated vehicles that are currently available and will appear in the future, only vehicles of the fifth level will have such an automated driving system that completely eliminates the need for a driver to drive a vehicle (Government Decree RF dated March 25, 2020 No. 724-r). Therefore, in the event of an accident involving a vehicle belonging to the fifth level of automation, it will be necessary to radically revise the issues of qualifying a transport crime in terms of determining the subject of its composition. In all other cases, unmanned vehicle control systems, artificial intelligence technologies integrated into HAV systems are designed not to replace the driver (pilot, driver), but only to provide him with additional comfort and assistance in the process of driving a vehicle.

The possible absence of the driver inside the vehicle he is driving does not matter for qualification. The technological features of the HAV, which allow it to be controlled remotely, do not relieve the person controlling the movement of the vehicle from a distance from the obligation to comply with the established rules and operate safely. For these reasons, the driver, even if he refuses to directly (manually) control a vehicle moving in the “autopilot” mode, *ceteris paribus*, remains a person who is criminally liable for committing a transport crime.

Secondly, a broad interpretation of the concept of “a person driving a vehicle” in the qualification process is inappropriate, since this can lead to insurmountable difficulties in distinguishing between related elements of transport crimes. Therefore, it is unacceptable to recognize a person who is a software developer for the HAV control system, as well as a person who was directly involved in the production of an unmanned vehicle, as subjects of the offenses under Art. 263, 264, 264<sup>1</sup> and 271<sup>1</sup> of the Criminal Code. When they commit socially dangerous acts that encroach on transport security and cause physical and (or) property damage, the issue of bringing to responsibility under Art. 263<sup>1</sup>, 266–267<sup>1</sup> of the Criminal Code.

Finally, thirdly, the very formulation of the question of the criminal liability of a person only on the grounds that he is the owner or other legal owner of HAV is incorrect. In the event of an accident or disaster involving a HAV, this person may be subject to other types of legal liability for damage caused by the activities of a source of increased danger, a variety of which is an unmanned vehicle.

### References

*Aksenova E. I.* Ekspertnyi obzor razvitiya tekhnologii iskusstvennogo intellekta v Rossii i mire. Vybor prioritnykh napravlenii razvitiya iskusstvennogo intellekta v Rossii [Expert review of the development of artificial intelligence technologies in Russia and the world. Selection of priority areas for the development of artificial intelligence in Russia]. M.: GBU “NII OZMM DZM”, 2019. 38 p.

*Begishev I. R., Khisamova Z. I.* Iskusstvennyi intellekt i ugovnyi zakon: monografiya [Artificial intelligence and criminal law: monograph]. M.: Prospekt, 2021. 192 p.

*Kovalev V.* “Pochemu tekhnika lomaetsya”, ili chto takoe zabytoe ponyatie “nadezhnost” [“Why equipment breaks”, or what is the forgotten concept of “reliability”] // Komponenty i tekhnologii [Components and technologies]. 2008. No 4. Pp. 19–22.

*Korobeev A. I., Chuchaev A. I.* Bepilotnye transportnye sredstva, osnashchennye sistemami iskusstvennogo intellekta: problemy pravovogo regulirovaniya [Unmanned vehicles equipped with artificial intelligence systems: problems of legal regulation] // Aziatsko-Tikhookeanskii region: ekonomika, politika i pravo [Asia-Pacific Region: Economics, Politics and Law]. 2018. No 3. Pp. 117–132.

*Mosechkin I. N.* Iskusstvennyi intellekt v ugovnom prave: perspektivy sovershenstvovaniya okhrany i regulirovaniya: monografiya [Artificial intelligence in criminal law: prospects for improving protection and regulation: monograph]. Kirov: Vyatskii gosudarstvennyi universitet, 2020. 111 p.

*Laptev V. A.* Ponyatie iskusstvennogo intellekta i yuridicheskaya otvetstvennost' za ego rabotu [The concept of artificial intelligence and legal responsibility for its work] // Pravo. Zhurnal Vysshei shkoly ekonomiki [Law. Journal of the Higher School of Economics]. 2019. No 2. Pp. 79–102.

*Liu Hin-Yan.* Irresponsibilities, inequalities and injustice for autonomous vehicles. Ethics and Information Technology. Springer, 2017. 15 p.

*Bruskin S. N.* Modeli i instrumenty prediktivnoi analitiki dlya tsifrovoy korporatsii [Models and tools of predictive analytics for a digital corporation] // Vestnik REU im. G. V. Plekhanova [Herald of the G. V. Plekhanov Russian Economic University]. 2017. No 5. Pp. 135–139.

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### **Recommended citation**

*Lapshin V.F.* A person subject to criminal liability for violation of transport security using artificial intelligence technologies. *Kazan University Law Review*. 2021; 3 (6): 166–183. DOI: 10.30729/2541-8823-2021-6-3-166-183.