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# **Assistance devices and autonomous vehicles, or the fourth industrial revolution in the automotive industry. Reflections on criminal liability**

## **Abstract**

The fourth technical revolution has undoubtedly become a fact. It has affected, and that to a large extent, the automotive industry. Motor vehicles provided with driver-assistance systems have appeared, such as those warning of obstacles, maintaining a safe distance from preceding vehicles, informing of a blind spot, or autonomously automatically adjusting speed, slowing down, following navigation, etc., the role of the driver only being to indicate the destination. However, should the driver have full confidence in those systems, and allow for the mistakes they make, and what impact will this have on their possible criminal liability? These are the issues raised in the publication, which at the same time points out that the legal systems are absolutely not adapted to modern technologies, artificial intelligence, or the assessment of so-called robot drivers.

**Key words:** driver, autonomous vehicles, safety rules, predictability, the issue of fault

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## Introduction

Technical progress, and the development of information technology, as well as that of other scientific disciplines, is flowing widely into the automotive sector, which is so closely linked to road safety. Another industrial revolution, also known as the fourth, has become a fact. Just a few years ago, nobody would have imagined that motor vehicles would be equipped with driver-assistance systems, for example, for traction control, informing of a blind spot, identifying obstacles, automatically adjusting speed, assessing distance from the preceding vehicle, automatically braking, and others. Technology is rushing forward at a rapid pace. Autonomous vehicles are appearing, already being in service, with devices whose role is to automate the driving system. The so-called driver is simply deprived of control over the driving process, direction, navigation, observation of the surroundings, and safety. Their role is reduced to specifying a destination, and the rest is carried out by an obedient, programmed, machine which is a kind of robot. Therefore, it can be stated that Article 8 of the Vienna Convention on Road Traffic (Journal of Laws of 1990, No. 82, item 74, as amended) has become obsolete. The Convention provided that „every moving vehicle or combination of vehicles shall have a driver”, and every driver shall at all times be able to control his (or her) vehicle.

To date, however, no definition of an autonomous car has been developed. According to the US National Highway Traffic Safety Administration, there are six levels of vehicle autonomy, ranging from full driver control and partial automation, to full autonomy. On the other hand, in the European Union, there is a classification of automation levels similar to the American one, the SAE (International Society of Automotive Engineers) (Lex/el).

Generally speaking, it may be assumed that in the six levels of automation indicated, 0 to 2 represent the driver's decisive role over the vehicle. The others eliminate the referred-to control. The view of M. Burtowy is that the consequent circumstances related to steering, acceleration, braking, observation of the surroundings, behaviour in the event of a breakdown, or any other event, as well as a change to the mode from classic to autonomous-computer, should be

accepted<sup>1</sup>. Thus, the more automated a vehicle is, the more driving and safety tasks it takes over<sup>2</sup>.

To sum up, it may be assumed that vehicles equipped with driver-assistance devices, as well as autonomous vehicles, are kinds of robot, but no definition of a robot has been provided in the Polish legal system so far. At this point, the view of I. Asimov (Lex/el) may be quoted, who defined Three Laws of Robotics, these being 1) a robot may not injure a human being, or, through inaction, allow a human being to come to harm, 2) a robot must obey any instruction given it by human beings, except where such orders would conflict with the First Law, 3) a robot must protect its own existence, as long as such protection does not conflict with the First or Second Law.

The presented general considerations are particularly important for the issue related to the criminal liability of drivers of vehicles equipped with driver-assistance devices, such as autonomous vehicles. These problems have not yet been solved by the legislator or in practice, including case-law. Therefore, this is the basic scientific assumption of this publication, in indicating what we might face in the near future, although attempts have already been made to consider the civil liability of manufacturers, vendors, or authors of software for autonomous vehicles<sup>3</sup>.

## The criminal liability of the driver for errors made by assistance devices

Let's start with a case study. Ł.B. was accused of causing, while driving an Audi passenger car on a motorway, as a result of exceeding the speed limit, and failing to observe the road properly, a collision with a moped, the rider of which was travelling in the left-hand lane of the road, resulting in serious bodily injuries to the rider and the passenger of the moped<sup>4</sup>.

In the course of the proceedings, it was established that Ł.B. had exceeded the speed limit by approximately 10 km/h, and, while driving at an admissible

1 M. Burtowy, *Samochody autonomiczne. Wybrane problemy prawne*, „Paragraf na Drodze” 2020, nr 2, s. 14.

2 K.J. Pawelec, *Zarys metodyki pracy obrońcy i pełnomocnika w sprawach przestępstw i wykroczeń drogowych*, Warszawa 2021, s. 488.

3 M. Burtowy, *op. cit.*, s. 12–18.

4 Akta Sądu Rejonowego dla Warszawy Woli w Warszawie, III Wydział Karny, III K 414/17; K. J. Pawelec, *Zarys...*, s. 487.

speed of 120 km/h he was also technically unable to avoid a collision. In addition, the automatic-braking system preventing collisions with obstacles did not work in the car. The latter circumstance was analysed by the legal expert, who expressed the firm opinion that the post-crash examination of the Audi car to determine the reasons for the failure of the ACC system (Adaptive Cruise Control), which automatically regulates the speed of the vehicle and the distance from the preceding vehicle, under specific circumstances, indicated that it might not have worked. In some cars provided with the ACC system, it was unable to recognise a motorbike driving in the middle of the lane, and also had limitations in recognising a motorbike driving near the edge of the lane<sup>5</sup>.

This example raises the question of whether the driver can have full confidence in assistance systems, which, needless to say, on multiple occasions automatically take defensive action faster than a human being. The fact is that manufacturers include information such as „never rely solely on a camera”. The answer to the question posed is crucial to the possible criminal liability of the driver. If the driver comply with the applicable safety rules, or specific, detailed, regulations, it is hard to talk about their criminal liability. The situation will be different when it is proven that they culpably violated the aforementioned rules, or specific, detailed, regulations. However, the situation becomes considerably more complicated when the victim also violated the traffic rules, and the driver assistance systems did not work. In this case, the criminal liability of the driver will depend on whether they were able to predict, and it was possible to impose such a duty on them for, the atypical behaviour of the victim. That behaviour will also depend on the findings as to whether it could have been perceived, or correctly interpreted, and whether the driver had enough time to react in such a way as to avoid the danger. If, therefore, the assistance-system failed, that circumstance should certainly have been relevant to the assessment of the driver’s fault.

Referring back to the example provided above, the court found Ł.B. guilty, while also considering that the driver of the moped had contributed significantly. It tacitly disregarded the failure of the ACC system.

5 See A. Ambroźnik, *Opinia techniczna do sprawy III K 414/17 Sądu Rejonowego dla Warszawy Woli w Warszawie, niepublikowane*; K.J. Pawelec, *Zarys...*, s. 487.

## Who will be held liable for errors made by a robot-car?

Onet.pl published information about a police pursuit of a Tesla Model S car which was travelling at a speed of 140 km/h while the driver and the passenger of the vehicle were asleep. The Tesla was provided with modern assistance systems. The way it was being driven did not pose any danger to traffic safety.

However, in the event of an accident arising from a failure to identify an obstacle or another error, should or could the person behind the wheel be held criminally liable for the offence? At this point, it should be recalled that, in the case of a fully-automated vehicle (levels 3 to 5), the driver's role is limited solely to indicating the destination. The rest is handled by software which the driver cannot influence, or even interfere with. Should, therefore, an obligation of limited trust in an autonomous vehicle, or rather a robot and its software, be imposed on him or her? This is a circumstance in which it must be determined whether the driver were able to regain control of the vehicle, and were able to avoid danger. This is a problem which will have to be faced by legislative bodies, as well as in case-law. The literature on the subject has recognised this problem, but in only terms of liability for damages caused to third parties and those suffered by users of fully autonomous vehicles<sup>6</sup>.

Generally, no attempt was made to consider the issue of criminal liability, its being pointed out that the driver should be able to observe the road at all times, and, if not, stop the vehicle, or ask for help from passengers or other persons. A similar approach was taken by the European Parliament in its Resolution of 16 February 2017, paragraph 53. It noted that liability should be based on the principles of risk specific to civil law, but it requires proof of damage and the establishment of a causal link between the damage and the harmful functioning of the device. Criminal liability cannot, of course, be ruled out completely, but the previously developed principles definitely do not correspond to the changing reality. Therefore, from the point of view of the possible criminal liability of the driver, the issues of the existence of a causal link between the failure of the system built into the vehicle and the result in the form of a crash, bringing about its imminent danger, or a road accident, will probably remain outside their interest. Insurers, dealers, and manufacturers

<sup>6</sup> For further details see M. Burtowy, *op. cit.*, s. 12; K.J. Pawelec, *Zarys...*, s. 488.

will certainly play an important role in such cases. The criminal liability of drivers, if they can be called so, is likely to be pushed into the background<sup>7</sup>.

## Conclusions

The possibility of giving robot-cars full control over transport might still be a long way off, but it cannot be ruled out that it will happen much sooner than many think. Artificial-intelligence technology is speeding up at an exponential rate. However, before fully automated vehicles appear on the roads, there is a need to consider liability for damages caused by road-traffic offences. The existing regulations stipulating that one of the traffic participants, or a person not directly participating in traffic, but at least indirectly linked to ensuring its safety, should be liable, might become obsolete. However, how should an accident involving a vehicle without human participation be treated? Will the autonomous system be at fault, or perhaps the person who designed and programmed it, or perhaps the person who authorised it for sale, granted it a certificate of approval, or put it into service? These questions remain unanswered for the time being. According to M. Litwinska-Werner, three solutions will be possible, i.e. the liability of the manufacturer, the owner, and in theoretical models, also that of the robot<sup>8</sup>. It seems that the list of responsible entities mentioned by the author is too narrow, and does not include the persons responsible for putting such vehicles into service, authorising them for sale, or those responsible for occupational health and safety. Previous tests of autonomous vehicles in normal road traffic indicated that the vast majority of accidents and collisions were caused by human error, undoubtedly the weakest link in road traffic. This error, as practice shows, appears to be a significant simplification, indicating a kind of automation of criminal liability. It should be noted that such vehicles moved only within the limits of the software invented by humans. They could therefore fail to react to non-model behaviour, or to obstacles which were not to be expected. The driver's error was thereby questionable in many cases, as he or she were not culpable. However, as can be expected, in the near future there will be

7 Cf.: P. Tarpley, S.D. Jesma, *Autonomous vehicles: The legal landscape in the US*, [www.nortonrosefulbright.com](http://www.nortonrosefulbright.com) [dostęp: 7.09.2021]; K.J. Pawelec, *Zarys...*, s. 489.

8 M. Litwińska Werner, as Cited in K.J. Pawelec, *Bezpieczeństwo i ryzyko w ruchu drogowym*, Warszawa 2020, s. 305–307.

vehicles provided with artificial-intelligence systems, namely self-learning, and capable of analysing information at much greater speeds than the human mind. After all, they will be able to react to unpredictable situations, as well as to communicate with each other and analyse information sent by roadside equipment. The criminal law on liability for causing accidents, and other traffic incidents or misdemeanours, will therefore have to be thoroughly revised. Likewise, the previously developed concepts of criminal liability are likely to become largely obsolete<sup>9</sup> when looking at the concepts of liability for causing accidents and other road-traffic incidents (the objective attribution of the effect, extended liability, indifference of will, recklessness, contribution)<sup>10</sup>.

Importantly, it will not be possible to forget that for the subjective capacity of the perpetrator to be attributed a prohibited act, its subjective elements will have to be taken into account, such as the capacity of a specific perpetrator to perceive and determine the limits of the threat to a legal good, as well as to correctly read the information provided by vehicle systems and to interpret it correctly. Subjective incapacity on their part will not necessarily imply the exclusion of criminal liability, but will depend on the ability of the entity to be held liable for their occurrence. On the other hand, the subjective capacity of the perpetrator to be attributed a prohibited act in the objective aspect will depend on the knowledge and skills necessary to participate correctly and safely in traffic<sup>11</sup>. Thus, extremely high criteria, including in terms of technical knowledge, IT knowledge, professional experience, and scientific achievements, as well as certain predispositions and skills in reacting to signals given by IT systems and anomalies associated with performed and programmed manoeuvres, will have to be applied to candidates for drivers and experts reconstructing such events. This, however, will require amendments to the existing road-traffic legislation<sup>12</sup>.

9 For further details see K.J. Pawelec, *Zarys...*, s. 469–487.

10 *Ibidem*, s. 473–487.

11 Cf.: K. Buchała, *Przestępstwa i wykroczenia przeciwko bezpieczeństwu w komunikacji drogowej. Komentarz*, Bydgoszcz 1997, s. 80–81; G. Bogdan [w:] *Kodeks karny. Część szczególna. Komentarz do art. 117–201*, red. W. Wróbel, A. Zoll, Warszawa 2017, s. 492; K.J. Pawelec, *Bezpieczeństwo...*, s. 310–312.

12 For further details see: *ibidem*, s. 342–351.

### Bibliography

- Buchała K., *Przestępstwa i wykroczenia przeciwko bezpieczeństwu w komunikacji drogowej. Komentarz*, Bydgoszcz 1997.
- Burtowy M., *Samochody autonomiczne. Wybrane problemy prawne*, „Paragraf na Drodze” 2020, nr 2.
- Kodeks karny. Część szczególna. Komentarz do art. 117–201*, red. W. Wróbel, A. Zoll, Warszawa 2017.
- Pawelec K.J., *Bezpieczeństwo i ryzyko w ruchu drogowym*, Warszawa 2020.
- Pawelec K.J., *Zarys metodyki pracy obrońcy i pełnomocnika w sprawach przestępstw i wykroczeń drogowych*, Warszawa 2021.
- Tarpley P., Jesma S.D., *Autonomous vehicles: The legal landscape in the US*, [www.nortonrosefulbright.com](http://www.nortonrosefulbright.com) [dostęp: 7.09.2021].

## **Urządzenia wspomagające i pojazdy autonomiczne, czyli o czwartej rewolucji przemysłowej w motoryzacji. Refleksje o odpowiedzialności karnej**

### Streszczenie

Czwarta rewolucja techniczna stała się niewątpliwie faktem. Dotknęła ona, i to w szerokim zakresie, motoryzację. Pojawiły się pojazdy samochodowe wyposażone w systemy wspomagające kierujących, ostrzegające o przeszkodach, automatycznie zwalniające, utrzymujące bezpieczną odległość od poprzedników, zapobiegające zajechaniu drogi czy też autonomiczne same regulujące prędkość, zwalnianie, śledzące nawigację itp., a rolą kierującego było wyłącznie wskazanie celu podróży. Czy jednak kierujący powinien mieć pełne zaufanie do tych systemów, liczyć się z popełnionymi przez nie błędami, jakie będzie miało to znacznie dla jego ewentualnej odpowiedzialności karnej? Są to zagadnienia poruszone w publikacji, która jednocześnie wskazuje, że systemy prawne absolutnie nie są dostosowane do nowoczesnych technologii, sztucznej inteligencji i oceny tzw. kierujących samochodami będącymi robotami.

**Słowa kluczowe:** kierujący, pojazdy autonomiczne, zasady bezpieczeństwa, przewidywalność, problematyka winy