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Articles

Studia Iuridica Lublinensia vol. XXIX, 5, 2020
DOI: 10.17951/sil.2020.29.5.165-180

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Civil Liability for Damage Caused by a Physical Defect of an Autonomous Car in Polish Law

Cywilnoprawna odpowiedzialność za szkodę spowodowaną wadą fizyczną samochodu autonomicznego w polskim prawie

SUMMARY

The issue of liability for damage caused by the movement of a defective autonomous car is multi-faceted and multi-problem. The purpose of the article is to investigate the issue of liability for damage caused by a physical defect in an autonomous car in the Polish civil law system and determining whether the currently existing civil law regulations are sufficient for effective protection of victims. The paper begins with a definition of an autonomous car – that is a vehicle enabled with technology which has the capability of operating without the active control or monitoring of a natural person. Next, the levels of automation (from 0 to 5) are presented. The following describes the concept of a physical defect. The next part is an analysis of the theories that can be applied to the problem of autonomous vehicles, along with an assessment of the effects of their use. Finally, conclusions from the analysis of the title issue are included.

Keywords: physical defect; damage; autonomous car; levels of automation

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INTRODUCTION

It seems that a car traveling on the road without driver involvement is quite a distant prospect. However, in practice, many manufacturers in the automotive industry[1] and not only[2] started work on introducing automated vehicles[3] to road traffic. In the United States National Highway Traffic Safety Administration[4] proposed to allow vehicles using artificial intelligence to move[5]. In France, a regulation was adopted in March 2018 that allows the testing of highly automated vehicles, provided that the driver can take control of the vehicle. In addition, in some situations, the legislator allows the driver to remain outside the vehicle[6]. In Germany in May 2018, the possibility of a conditional use of autonomous vehicles was regulated – the driver must remain behind the wheel to take control of the vehicle if

[1] In the automotive industry, work is carried out by Peugeot, Audi, BMW, Volkswagen, Ford, Volvo, Daimler, Opel, Fiat and Tesla.

[2] For example, Google established a company for this purpose WAYMO (https://waymo.com).

[3] The problem of introducing autonomous vehicles into traffic concerns not only cars. Currently, advanced work is underway on autonomous floating, rail and flying vehicles (drones, airplanes, and even ships and space stations). On this subject, see e.g. K. Karski, *Cywilne bezzałogowe statki powietrzne w świetle przepisów prawa międzynarodowego*, [in:] *50 lat konwencji tokijskiej – bezpieczeństwo żeglugi lotniczej z perspektywy przestrzeni powietrznej i kosmicznej. Księga dedykowana Profesorowi Markowi Żyliczowi*, eds. Z. Galicki, K. Myszona-Kostrzewa, Warszawa 2014, pp. 127–142; idem, *Wojskowe bezzałogowe statki powietrzne a prawo międzynarodowe*, [in:] *Człowiek i prawo międzynarodowe. Księga dedykowana Profesorowi Bogdanowi Wierzbickiemu*, eds. M. Perkowski, J. Szymański, M. Zdanowicz, Białystok 2015, pp. 217–237; K. Karski, K. Myszona-Kostrzewa, *Space Activities: Economic and Legal Aspects*, "Finance India" 2020, vol. 34(1), pp. 59–74; E. Karska, K. Myszona-Kostrzewa, *Załogowe i bezzałogowe stacje kosmiczne: wybrane aspekty prawne*, „Prawo i Więź" 2020, no. 2(32), pp. 49–69; Z. Pepłowska-Dąbrowska, *Statki bezzałogowe na horyzoncie prawa morskiego. Przykład konwencji o odpowiedzialności cywilnej*, „Prawo Morskie" 2019, no. 37, pp. 33–44.

[4] NHTSA – agency dealing with road safety regulations. Some States have banned the use of automated vehicles on the roads. In this regard, the US Congress has started a debate on the draft act on autonomous vehicles (H.R.3388 – Self Drive Act). In September 2017, the bill was forwarded to the Senate Committee on Trade, Science and Transport and is awaiting vote. See Self Drive Act (H.R.3388), www.congress.gov/bill/115th-congress/house-bill/3388/actions?q={%22search%22:[%22Safely+Ensuring+Lives+ Future+Deployment+and+Research+in+Vehicle+Evolution+(SELF+DRIVE)+Act%22]}&r=1&KWICView=false [access: 12.06.2020].

[5] *Automated Vehicles for Safety*, www.nhtsa.gov/technology-innovation/automated-vehicles [access: 12.06.2020].

[6] According to Article 12 II i IV of the Act on Driving Experimental Vehicles with the Function of Delegating Driving on Public Roads (Décret n° 2018-211 du 28 mars 2018 relatif à l'expérimentation de véhicules à délégation de conduite sur les voies publiques, JORF n°0075 du 30 mars 2018 texte n° 3, www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000036750342&categorieLien=id, access: 12.06.2020) "by activating the driver delegation function, the driver can take control of the vehicle at any time, in particular in emergencies or when the vehicle does not meet the conditions of use specified in the tests. Permission to experiment may authorize the driver to be physically out of the vehicle. He must then be able to take control of the vehicle at all times".

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necessary[7]. In Poland, it is allowed to conduct research related to testing autonomous vehicles in road traffic on public roads, in particular for the needs of the use of autonomous vehicles in public transport and other public tasks, which is possible provided that the safety requirements are met and permission to carry out these works is obtained (Article 65l para. 1 of the Road Traffic Act[8]). The problem was also raised within the EU due to the fact that "autonomous mobility can lead to significant benefits"[9].

The emergence of autonomous cars in road traffic on a larger scale will cause many problems in various areas, including law. In the event of loss of health, life or other damage, it will be necessary to determine who will be the subject of the dispute, who will be liable – especially in the event of a road accident – the creator of the car control system, the manufacturer of such a car or its owner? In the EU it has also been noted that

> […] the features of new digital technologies such as AI, IoT and robotics undermine certain aspects of the EU and national liability framework and may limit their effectiveness. Some of these characteristics may make it difficult to determine whether damage is the result of human behavior that may be the basis for a guilty claim in accordance with national laws. That is, claims for damages based for national tort law can be difficult or costly to prove, and therefore victims may not receive adequate compensation[10].

The rules on car ownership, road traffic, criminal liability, security, privacy protection and civil liability will need to change. Acceleration of changes in legal regulations[11] becomes necessary, especially since partly autonomous vehicles are already in road traffic and have been involved in traffic accidents[12], and highly

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[7] According to § 1a Abs. 1-2 StVG (Straßenverkehrsgesetz in der Fassung der Bekanntmachung vom 5. März 2003, BGBl. I S. 310, 919, www.gesetze-im-internet.de/stvg/__1a.html, access: 12.06.2020) "it is permitted to drive a motor vehicle by means of a highly or fully automated driving function if this function is used as intended", and the driver at the request of the system can immediately take control of the vehicle.

[8] Act of 20 June 1997 – Road Traffic Law (consolidated text Journal of Laws 2020, item 110 as amended).

[9] See Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions "The road to automated mobility: an EU strategy on mobilityin the future", COM(2018)283 final, p. 2.

[10] See Report from the Commission to the European Parliament, the Council and the European Economic and Social Committee on the impact of artificial intelligence, the Internet of Things and robotics on safety and responsibility, COM(2020)64 final, p. 16.

[11] See S. Rudnik, *Kierunek rozwoju regulacji prawnych pojazdów autonomicznych w ramach prac europejskiej komisji gospodarczej ONZ (UNECE) oraz międzynarodowego związku telekomunikacyjnego (ITU)*, „Autobusy" 2017, no. 6, p. 1265.

[12] There are a few Tesla car accidents that resulted from autopilot problems. See *Tesla Model 3: Autopilot engaged during fatal crash*, 2019, www.bbc.com/news/technology-48308852 [access: 12.06.2020]; *Tesla car that crashed and killed driver was running on Autopilot, firm says*, 2018, www.theguardian.com/technology/2018/mar/31/tesla-car-crash-autopilot-mountain-view [access: 12.06.2020].

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automated vehicles are tested on these roads with varying degrees of success[13] and they are coming soon[14].

DEFINITION OF AN AUTONOMOUS VEHICLE (CAR)[15]

The term "vehicle" means vehicles in every movement: land, air and sea. In turn, an autonomous vehicle is a vehicle that is capable of independent movement – moving without the participation of the driver. Generally, two types of autonomous vehicles are distinguished: non-cooperative (fully autonomous) and cooperative (partly autonomous)[16]. The first to move need different sensors, cameras or other controllers (including artificial intelligence), the second use technology to collect information about the environment through communication: vehicle to vehicle (V2V), vehicle to infrastructure (V2I) and vehicle with any other elements (V2X)[17].

In the literature on the subject, five levels were used at the beginning (from 0 to 4)[18], and currently a six-level division (from 0 to 5) of the level of autonomy[19]. This division was introduced based on the determination of who, what does and when. Level 0 is non-automated vehicles[20], in which man has full and sole control over the vehicle at all times[21]. Level 1 is Automation-Assisted vehicles[22], in which

[13] *Koniec śledztwa ws. wypadku autonomicznego Ubera. Co było przyczyną?*, 2019, www.auto-swiat.pl/wiadomosci/aktualnosci/koniec-sledztwa-ws-wypadku-autonomicznego-ubera-co-bylo-przyczyna/mvgfhqv [access: 13.06.2020]; D. Długosz, *Autonomiczne pojazdy szykują się do testów na polskich drogach*, 2019, www.komputerswiat.pl/moto/autonomiczne-pojazdy-na-dniach-beda-testowane-na-polskich-drogach/tbdgxky [access: 13.06.2020].

[14] See *Automated Driving Roadmap*, www.ertrac.org/uploads/images/ERTRAC_Automated_Driving_2017.pdf [access: 15.06.2020]; *Samochody autonomiczne w UE: od fantastyki naukowej do rzeczywistości*, 2019, www.europarl.europa.eu/news/pl/headlines/economy/20190110STO23102/samochody-autonomiczne-w-ue-od-fantastyki-naukowej-do-rzeczywistosci [access: 15.06.2020].

[15] The word "autonomous" is not a proper term because it basically means independent – while the essence of an autonomous vehicle is its automatic control in motion (more widely on this topic: B. Walker Smith, *Automated Vehicles Are Probably Legal in the United State*, "Texas A&M Law Review" 2014, vol. 1(3), DOI: https://doi.org/10.37419/LR.V1.I3.1, p. 442).

[16] *Report of the sixty-eighth session of the Working Party on Road Traffic Safety*, www.unece.org/fileadmin/DAM/trans/doc/2014/wp1/ECE-TRANS-WP1-145e.pdf [access: 12.06.2020], pp. 10–15. See also Communication from the Commission to the European Parliament, p. 4.

[17] KPMG, *Self-Driving Cars: The Next Revolution*, 2012, https://assets.kpmg.com/content/dam/kpmg/pdf/2015/10/self-driving-cars-next-revolution_new.pdf [access: 15.06.2020], p. 12.

[18] See S.P. Wood, J. Chang, T. Healy, J. Wood, *The Potential Regulatory Challenges of Increasingly Autonomous Motor Vehicles*, "Santa Clara Law Review" 2012, vol. 52(4), p. 1429.

[19] This division accepts NHTSA (see *Automated Vehicles…*) and also the European Commission (see Communication from the Commission to the European Parliament, p. 4).

[20] S.P. Wood, J. Chang, T. Healy, J. Wood, *op. cit.*, pp. 1429–1430.

[21] This level is also referred to as "human".

[22] S.P. Wood, J. Chang, T. Healy, J. Wood, *op. cit.*, pp. 1430–1431.

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a person still has control over the vehicle, but in critical situations mechanisms that take control of the vehicle are activated, e.g. ESC/ESP[23]. Level 2 is vehicles with Monitored Automation[24], i.e. in which driving is entrusted with technology (e.g. an automatic parking system), but the driver is to have control over the vehicle at all times. Level 3 are vehicles equipped with Conditional Automation[25], i.e. those in which the driver can rely on autopilot under certain conditions – the system is to inform the driver about the need to take control of the vehicle. Level 4 is a High Automation vehicle, that is, those in which the driver does not have to take control, but the automated system can operate only in certain environments and under certain conditions. Level 5 is Full Automation vehicles[26], in which the driver does not have to take control, and the automated system can handle all road situations.

Currently, there is no comprehensive regulation on the movement of fully autonomous vehicles on the road, while provisions regulating the movement of partially automated vehicles are increasingly being adopted[27].

AUTONOMOUS CAR IN ROAD TRAFFIC

According to Article 1 letter p of the Vienna Convention on Road Traffic[28], the term "motor vehicle" means any motor vehicle normally used for carrying persons or goods on the road, or for hauling vehicles used for the carriage of persons or goods on the road. This term includes trolleybuses, i.e. vehicles connected to an electric cable, not running on rails, but it does not include vehicles such as: agricultural tractors that are only occasionally used for transporting persons or goods on the road or for hauling vehicles used for the carriage of persons or goods on the road. The Vienna Convention does not define the concept of "autonomous vehicle". Before March 23, 2016 – then the amendment to the regulations came into force – the rule was that the driver should constantly control it. After this date, the use of driving assistance systems was allowed provided that the driver could at any time switch off such systems or take control of them (Article 8 para. 5bis of the Vienna Convention)[29], in other words, partly autonomous vehicles could participate in road traffic.

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[23] An electronic stability control system or electronic stability program is a system that improves vehicle stability by detecting and reducing loss of traction.

[24] S.P. Wood, J. Chang, T. Healy, J. Wood, *op. cit.*, p. 1431.

[25] *Ibidem*, pp. 1431–1432.

[26] Cf. *ibidem*, p. 1432.

[27] As the title indicates, this study applies only to the movement of autonomous cars "affected" by a physical defect.

[28] Convention on Road Traffic of 8 November 1968 (Journal of Laws 1988, No. 5, item 40).

[29] United Nations, *Convention on Road Traffic, Vienna, 8 November 1968. Acceptance of amendments to Articles 8 and 39 of the Convention*, https://treaties.un.org/doc/Publication/CN/2015/

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The law in force in Poland defines an autonomous vehicle[30] as "a car vehicle equipped with systems that control the movement of this vehicle and enabling his movement without the intervention of a driver who can take control of this vehicle at any time" (Article 65k of the Road Traffic Act). The provision introduces the need to remain in the driver's seat of a person ready to drive a car, and therefore, as in the Vienna Convention, it is a partially autonomous vehicle (levels 2–3). However, Polish regulations do not regulate road traffic of vehicles from levels 4–5 at all.

PHYSICAL DEFECT OF THE AUTONOMOUS CAR

An item may have a physical defect (generally speaking regarding its functional characteristics) or a legal defect (regarding the right of ownership of an item).

According to Article 556[1] § 1 of the Civil Code[31] physical defect consists in the incompatibility of the sold item with a contract. In the case of an autonomous car, this means that the automatic functions do not work or do not work properly. In such a situation, the autonomous car has no properties that this kind of thing should have due to the purpose in the contract marked or resulting from the circumstances or destination (Article 556[1] § 1 point 1 CC).

In addition, in the case of an autonomous car (levels 2–5), the essence of its operation is software that allows the technology to be partially or fully automatic driven. What happens if the autonomous car software is faulty? Should the physical defect of the software be separated from the physical defect of the vehicle or not?

A car is a thing. Car software is part of it. A part of a thing is everything that cannot be disconnected from it without damage or a significant change in the whole or without damage or a significant change in the disconnected object (Article 47 § 2 CC). Disconnecting (removing) a car's autonomous software is an action that causes change in a car that loses autonomous status (going to level 1 or 0). It is not about disabling the use of automatic functions (vehicles from levels 2–3), but depriving the car of the software. So the software shares the fate of the car, which means that the physical defect of the software will be a physical defect of the car.

Responsibility for physical defects of the autonomous car will depend on the effects of the physical defect – determining whether it is a defect affecting normal operation (e.g. the autopilot function cannot be turned on) or safety of use (e.g.

CN.529.2015.Reissued.06102015-Eng.pdf [access: 15.06.2020]; *Report of the sixty-eighth session of the Working Party*...

[30] In Polish such a vehicle should be described as self-propelled. The names autonomous car, self-driving car, robotic car are also used in English.

[31] Act of 23 April 1964 – Civil Code (consolidated text Journal of Laws 2020, item 1740 as amended), hereinafter: CC.

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the autopilot does not recognize obstacles when the function is turned on, which can lead to an accident). In the first case, it is the liability under the warranty for defects or guarantees when selling (Articles 556–581 CC)[32], in the second, liability for damage caused by a physical defect, i.e.:

1) liability under the warranty for damage caused by a physical defect in goods (Article 566 CC),
2) tort liability:
   - for the product (Article 449^1–449^{11} CC),
   - for a traffic accident (Article 436 CC),
   - on general principles (Article 415 CC).

In terms of imputation of responsibility, the most important thing is to determine the actual cause of the events that resulted in damage.

LIABILITY UNDER THE WARRANTY FOR DAMAGE CAUSED BY A PHYSICAL DEFECT OF A THING

Damage caused by a physical defect may consist not only of damage to the autonomous car, but also of damage to other goods of the buyer[33] or other entity. In the provisions regarding warranty for defects of things, Article 566 CC says that the seller or other entity may demand compensation for damages suffered by the buyer or other entity as a result of a physical defect. Pursuant to the provision, the buyer who uses the warranty is entitled to a claim for damages, which he suffered because he, without being aware of the existence of defects, concluded a contract. The buyer's claim should be limited to demanding reimbursement of the costs of concluding the contract, picking up the goods, transporting them, storage and insurance, and reimbursement of expenses made to the extent that they did not benefit from these expenses.

This is a responsibility within the so-called negative interest. The cost of research and expertise confirming the defect incurred is considered as part of the compensation[34].

[32] The principles of liability under the warranty for defects and warranty on sales are not the subject of this study.

[33] See judgement of the Supreme Court of 8 October 2003, III CK 83/03, LexPolonica no. 1852276; C. Żuławska, [in:] *Komentarz do Kodeksu cywilnego. Księga trzecia – zobowiązania*, vol. 2, Warszawa 2005, p. 64.

[34] J. Kozińska, [in:] *Ustawa o prawach konsumenta. Kodeks cywilny (wyciąg). Komentarz*, eds. B. Kaczmarek-Templin, P. Stec, D. Szostek, Warszawa 2014, p. 457.

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TORT LIABILITY

The placing on the market of an autonomous car with defects may constitute a tort. Such an act is not the production of a defective automatic car, but the placing on the market of a dangerous thing as a result of defects, if its defect has become the cause of personal injury or property damage[35]. If the autonomous car turned out to be dangerous, which resulted in damage, the holder may rely on the provisions governing liability for either the product or for a traffic accident or tort on general principles.

1. Product liability[36]

Product liability is a special form of tort liability, what is more, it is a separate tort[37]. A dangerous product is a movable thing (even if it was combined with another thing), as well as electricity and animals, if it does not provide the safety that can be expected taking into account the normal use of the product (Article 449^1 § 2 in conjunction with Article 449^1 § 3 CC). In practice, there are known cases when the car turned out to be a dangerous product (e.g. ignition of a vehicle)[38].

As a rule, the entity responsible for a dangerous autonomous car is the manufacturer, and the conditions for this responsibility are: placing such a car on the market, damage and a causal relationship between placing on the market, and doing harm. Product liability is based on the principle of risk, which is why the manufacturer may be released from liability by indicating one of the listed circumstances of exemption (Article 449^3 §§ 1 and 2 CC). In the case of an autonomous car, a special condition for dismissal should be considered in a situation where the

[35] Judgement of the Supreme Court of 21 November 1980, III CZP 50/80, OSNCP 1981, no. 11, item 205; judgement of the Supreme Court of 28 April 1964, II CR 540/63, OSNCP 1965, no. 2, item 32: "[…] the mere placing on the market of a car with a defect that could cause a disaster is a violation of the principles of public safety and the protection of human life and health". See also W. Czachórski, [in:] *System Prawa Cywilnego*, vol. 3, part 1, Wrocław 1981, p. 609. However, it seems that due to the existence of liability for damage caused by a dangerous product, the general principles of tort liability will apply to property damage that does not exceed EUR 500. On claims for damages, see e.g. G. Urbanik, *Odpowiedzialność za szkody wyrządzone przez pojazd autonomiczny w kontekście art. 446 k.c.*, „Studia Prawnicze. Rozprawy i Materiały" 2019, no. 2, pp. 83–95.

[36] In regulating this liability, the Polish legislator did not use the phrase "product liability" but the term "liability for damage caused by a dangerous product".

[37] E. Łętowska, *Ustawa o ochronie niektórych praw konsumentów – komentarz*, Warszawa 2000, p. 122; eadem, *Prawo umów konsumenckich*, Warszawa 2002, p. 109; C. Żuławska, *op. cit.*, p. 469; Z. Banaszczyk, P. Granecki, *Produkt niebezpieczny per se i niebezpiecznie wadliwy a odpowiedzialność producenta z art. 449^1 i następne k.c.*, „Monitor Prawniczy" 2002, no. 17, p. 78.

[38] F. Lambert, *Tesla says battery fire without crash in LA was 'extraordinarily unusual occurrence', still investigating the cause*, 2018, https://electrek.co/2018/09/05/tesla-battery-fire-la-without-crash [access: 15.06.2020].

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cause that caused the damage did not exist at the time of placing the vehicle on the market, because its dangerous properties appeared only after this fact and did not arise from the reason inherent in the vehicle at the time of its introduction for marketing[39] and when, due to the state of science and technology, the hazardous properties of the vehicle could not be predicted[40].

Whether the autonomous car is safe will be determined by the circumstances from the moment it is introduced to the market, and in particular the way it is presented on the market, information about the properties provided to the consumer (Article 449^1 § 3 sentence 2 CC). Similarly to the producer, the producer of the material or raw material or component[41] used subsequently to manufacture the car[42] is responsible, as well as the importer – a person who carries a foreign car into domestic circulation (Article 449^5 § 2 sentence 2 CC), as well as a quasi-producer, i.e. an entity that claims to be the producer by placing its name, trademark or other distinctive sign on the vehicle (Article 449^5 §§ 1 and 2 CC).

In a situation where a product without identifying[43] markings is introduced to the market, the responsibility is borne by "who in the scope of his business activity has sold the dangerous product, unless within one month from the date of notification on damage will show the injured person responsible"[44] (Article 449^5 §§ 4 and 5 CC). The responsibility of these persons is joint and several (Article 441 §§ 2 and 3 CC).

The manufacturer is liable for damage to property only if the value of the damage exceeds EUR 500. Nor can you claim any compensation for damage in the form of damage to the car itself, as well as benefits that the injured party could achieve in connection with its use[45] (Article 449^7 CC). In addition, liability for damage to

[39] In this premise, the impact of AI learning on driving an autonomous car should be considered, especially when it makes a decision that will differ from what the driver expects.

[40] It's about the so-called risk of progress – the state of science and technology did not allow the detection of dangerous properties – this premise is important in the case of fully autonomous self-learning vehicles. This is related to the problem of opacity, the ability of man to understand why the system has made such and no other decision, which in practice will require the use of the so-called black boxes.

[41] Part of it can be a module containing a system controlling automatic functions. In a situation where the manufacturer of an autonomous vehicle will not be the creator of the module with an automatic control system (module will create an external entity), then the module creator will also be responsible.

[42] Except when the sole cause of the damage was defective product design or manufacturer's instructions.

[43] Of course, such action is against the law, because it does not meet the requirements of the Act of 16 April 1993 on Combating Unfair Competition (consolidated text Journal of Laws 2020, item 1913).

[44] Manufacturer, importer, producer of raw material or materials, and if they cannot indicate them, then the person from whom he purchased the product himself.

[45] In this respect, you should also rely on general principles.

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property is borne by the manufacturer (or other entities) in a situation where an item which has been damaged or destroyed by a dangerous product is one of the items usually intended for personal use and in this way mainly the victim used it (Article 449² CC). The amount of damage does not matter in the case of personal injury.

Liability for a product with hazardous properties does not exclude liability for damages on general principles, as well as liability under the warranty for defects and warranty on sales (Article 449[10] CC)[46].

Entitled to claim compensation for damage caused by a dangerous car will be according to the provisions of "anyone"[47], and because it is a liability based on the principle of risk, the injured party does not have to prove the fault of the perpetrator. The injured person is first of all the person who suffered personal injury (i.e. a natural person) as a result of placing a dangerous car on the market[48]. This person should only prove the amount of damage and the causal link between the placing of the dangerous product on the market in the field of the economic activity of the person responsible and the damage caused by that product.

The analysis of product liability regulations in Polish law leads to the conclusion that in the event that an autonomous car is a dangerous product, the liability for damage caused by this car may suffer depending on the cause of the damage – the manufacturer alone or jointly and severally with other persons, e.g. with the software developer. However, due to the possibility of a dangerous car defect leading to a traffic accident involving such a car, it becomes necessary to establish a relationship between product liability and liability for a traffic accident.

2. Liability for damages caused by a traffic accident of an autonomous car

In the Polish law, by the Act of 18 January 2018 on Electromobility and Alternative Fuel[49], which introduced amendments to the Road Traffic Act, semi-autonomous cars were authorized for road traffic, in which it is required that the driver can take control of the car at any time. Thus, when using the automatic functions of a vehicle (e.g. parking assistant) while driving, the driver plays the role of a person who watches over the correctness of driving – is someone like a driving instructor, and the car – a "student". According to Article 25 para. 1 of the Act of 5 January

[46] Of course, in the case of their implementation in the areas appropriate for these responsibilities.

[47] It is disputed whether a thief may be entitled to compensation? In the case of such an entity, it does not appear that liability is excluded, unless the theft occurred before the product was placed on the market and the product caused damage to the thief. Cf. W. Dubis, [in:] *Kodeks cywilny*, vol. 1: *Komentarz do art. 1–534*, ed. E. Gniewek, Warszawa 2004, p. 1149.

[48] B. Gnela, *Odpowiedzialność za szkodę wyrządzoną przez produkt niebezpieczny*, Kraków 2000, p. 295.

[49] Consolidated text Journal of Laws 2020, item 908 as amended.

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2011 on Drivers of Vehicles[50], the provisions on the driver shall apply to the instructor teaching the person applying for a driving license to drive a car. The person driving the vehicle has, among others, the ability to manage it in a way that does not endanger safety, does not obstruct traffic and does not harm anyone (Article 3 para. 1 point 1 of the Act on Drivers of Vehicles). In certain situations, in the event of an autonomous car accident, the driver will be responsible for its consequences. This is because, after the entry into service of semi-autonomous vehicles, there were no changes in the scope of liability for the traffic of such cars and in the event of a traffic accident autonomous cars are treated as traditional vehicles[51]. Therefore, in a situation where an autonomous car causes a traffic accident should be used Article 436 CC. This provision provides that the liability for damage to property and persons caused by the movement of a mechanical means of communication moved by means of nature is borne by its own (or dependent) holder on a risk basis (Article 436 § 1 CC). Exclusion of liability may occur only for reasons expressly provided for in the Civil Code. These are damages caused by force majeure, or only due to the fault of the injured party or a third party. This liability shall not be excluded by proof of the fault of the vehicle owner[52], nor proving that the cause of the accident was a dangerous defect in such a vehicle.

This means, in principle, that in the light of current regulations the owner of an autonomous car will be liable for damages caused by the "automatic driver" regardless of the scope of the possibility of influencing his movement[53]. So a traffic accident caused by a dangerous defect in an autonomous car will not absolve the owner of such a car from liability for damages caused by such an accident[54]. Due to such regulations, it is difficult to imagine the wider popularization of an autonomous car.

[50] Consolidated text Journal of Laws 2020, item 1268 as amended.

[51] It is similar in French law – the so-called right Badintera (Loi n° 85-677 du 5 juillet 1985 tendant à l'amélioration de la situation des victimes d'accidents de la circulation et à l'accélération des procédures d'indemnisation, JORF du 7 janvier 1986, version consolidée au 6 juillet 2020, www.legifrance.gouv.fr/affichTexte.do?cidTexte=LEGITEXT000006068902#, access: 15.06.2020) establishes a system of faultless liability in which the vehicle owner is presumed to be the supervisor. See also L. Neuer, *Véhicules autonomes: qui est responsable en cas d'accident?*, www.lepoint.fr/editos-du-point/laurence-neuer/vehicules-autonomes-qui-est-responsable-en-cas-d-accident-12-06-2019-2318590_56.php [access: 15.06.2020].

[52] Judgement of the Supreme Court of 19 June 2001, II UKN 424/00, OSN 2003, no 6, item 155.

[53] The consequences of his liability will be alleviated by third party liability insurance, which provides the victim with compensation – in terms of this insurance, EU regulations treat autonomous cars as traditional (non-autonomous) cars. However, for the vehicle owner, a traffic accident will affect the premium or loss of discounts.

[54] In this situation, recourse claims against the car manufacturer cannot be ruled out. Cf. G. Urbanik, *op. cit.*, pp. 89–90.

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In addition, there is also the issue of the transition from the principle of risk to the principle of guilt, which in the event of a traffic accident will occur in the event of a collision of mechanical means of communication moved by means of nature and during transport out of courtesy. In these situations, according to Article 436 § 2 CC, an independent owner and dependent holder may mutually demand compensation for damages only on general principles. Also on general principles, these persons are liable for damages caused to those whom they transport with courtesy. The application of this provision means the need to prove the culprit's guilt in accordance with Article 415 CC, which for the injured party may cause significant difficulties in obtaining compensation.

Therefore, the current regulations need to be changed. One of the possible directions is the transfer of responsibility entirely (in the case of a fully autonomous car) or a significant part (in the case of a partially autonomous car) for damage caused by the movement of such a car to its manufacturer, manufacturer of the system to control such a car or other entity (e.g. importer, service technician), i.e. extending the product liability rules to damage caused by a traffic accident[55].

The liability of the car owner (including a partially autonomous car) may change in the event of damage caused by collision of vehicles and suffered by politely carried persons. In these cases, the car owner is liable on general principles according to Article 415 CC.

3. Tort liability under Article 415 CC

The provision instructs the offender to repair the damage caused by him and applies if, due to statutory exclusions, it is not possible to seek compensation under product liability or liability for a traffic accident. Compensation for damage caused by an autonomous car is primarily borne by the manufacturer due to his business activity, which he should carry out with due diligence. The disadvantage of this liability is the need to prove the fault of the perpetrator of the damage, which is not beneficial to the injured party despite the concept of so-called objective fault. The manufacturer's fault can be considered proven, especially when the hazardous properties are a consequence of defects in the material used for production, which could be detected either before the use of such material or during its technical

[55] Liability problems are also noted by the European Commission: "The features of new digital technologies such as AI, IoT and robotics undermine certain aspects of the EU and national liability frameworks and may limit their effectiveness. Some of these features may make it difficult to determine whether damage is the result of human behavior that may be the basis for a guilty claim in accordance with national laws. This means that claims for damages based on national tort law can be difficult or excessively expensive to prove, and therefore victims may not receive adequate compensation" (Report from the Commission to the European Parliament, the Council and the European Economic and Social Committee, p. 16).

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inspection. Manufacturing a vehicle from defective materials means the manufacturer's liability for damage. The manufacturer bears this responsibility not only towards the buyer of the vehicle.

The injured person may also claim compensation from the seller, who is then entitled to a claim against the manufacturer. The seller's liability is justified by the fact that, contrary to his professional obligations, he placed on the market a car with dangerous properties.

CONCLUSION

The issue of liability for damages caused by a defect of an autonomous car is complicated and multifaceted. In the current state, the Polish legal system assigns responsibility for damages caused by autonomous cars through the liability of the car owner (in the event of a traffic accident) or transfer of responsibility to the manufacturer, possibly the software developer or other persons (in the event of a consumer accident[56]), or assigning it to the seller (as an opportunity to claim damages under the warranty for defects)[57]. However, the question arises whether the current framework of liability for damage caused by a physical defect of an autonomous car corresponds to the conditions of use of these cars and whether the assumption of liability for physical defects of these cars (in particular for road damage in traffic) in current legislation is sufficient to effectively claim damages. The answer to this question seems to be negative. Currently, it is necessary for the legislator to intervene and introduce solutions that make the manufacturer and other persons involved in the production of an autonomous car more responsible, i.e. extend the rules of product liability to the effects of traffic accidents, and reduce the liability of end users[58].

[56] Consumer accident is a sudden event arising in connection with the use of products, which results in death or injury requiring medical assistance, in particular cuts, poisoning, burns, bites or stings (Article 3 point 4 of the Act of 12 December 2003 on General Product Safety, consolidated text Journal of Laws 2016, item 2047 as amended).

[57] This way of assigning liability is also described by the European Commission: "[…] an injured party involved in a car accident usually brings a claim for liability on a risk basis to the owner of the car (i.e. the person who buys liability insurance for the use of motor vehicles) and a claim for liability on the basis of fault on the driver (both claims under national civil law), and – if the vehicle was defective – a claim under the Directive on product liability towards the manufacturer" (Report from the Commission to the European Parliament, the Council and the European Economic and Social Committee, p. 15).

[58] The European Commission's recommendation in this regard is: "To address the situation and address possible uncertainties in the existing framework, some changes to the Product Liability Directive and national liability regimes may be considered, with the help of relevant EU initiatives using a targeted risk-based approach, i.e. taking into account the fact that there are different types

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Finally, it is worth emphasizing that fully autonomous cars are not yet adapted for operation without human supervision. There are still many technical challenges (even creating the right infrastructure) that need to be mastered so that the car is able, just like the driver, to fully sense and understand the surroundings, and to behave adequately to the situation[59].

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[59] Problems related to the full automation of the car, i.e. the introduction of artificial intelligence. For example, see A. Chłopecki, *Sztuczna inteligencja – szkice prawne i futurologiczne*, Warszawa 2018, pp. 59–60.

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STRESZCZENIE

Zagadnienie odpowiedzialności za szkody spowodowane ruchem wadliwego samochodu autonomicznego jest wieloaspektowe i wieloproblemowe. Celem opracowania jest zbadanie kwestii odpowiedzialności za szkody wyrządzone wadą fizyczną samochodu autonomicznego w systemie polskiego prawa cywilnego oraz ustalenie, czy obecnie istniejące regulacje cywilnoprawne są wystarczające dla skutecznego objęcia ochroną poszkodowanych. Artykuł rozpoczyna się od definicji samochodu autonomicznego – pojazdu wyposażonego w technologię, która może działać bez aktywnego sterowania lub monitorowania ze strony osoby fizycznej. Następnie zaprezentowano poziomy automatyzacji (od 0 do 5) oraz opisano pojęcie wady fizycznej. Kolejna część to analiza regulacji, które można zastosować do problemu dotkniętych wadą fizyczną samochodów autonomicznych wraz z oceną efektów ich zastosowania. W zakończeniu zawarto wnioski z analizy tytułowego zagadnienia.

Słowa kluczowe: wada fizyczna; szkody; samochód autonomiczny; poziomy automatyzacji