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SELF-DRIVING CARS AND CRIMINAL LIABILITY*

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Abstract: After clarifying the concepts of automated and autonomous vehicles, the purpose of the study is to investigate how reasonable the criminal sanction is arising from accidents caused by autonomous vehicles. The next question to be answered is that the definition of the crime according to the Hungarian law may be applied in case of traffic related criminal offences caused by automated and autonomous vehicles. During my research I paid special attention to two essential elements of criminal offence, namely the human conduct and guilt. Furthermore, I strived for finding solution for the next problem, as well: if the traffic related criminal offence is committed by driving an autonomous vehicle, how to define the subject of criminal liability.

Keywords: automated vehicle, autonomous vehicle, self-driving vehicle, criminal law, traffic related criminal offence, ultima ratio, liability

Absztrakt: A tanulmány célja, hogy az automatizált és az autonóm jármű fogalmainak elhatárolását követően megvizsgálja, hogy mennyiben indokolt az autonóm járművek üzemeltetéséből származó balesetek büntetőjogi szankcionálása, valamint alkalmazható-e a magyar bűncselekmény-fogalom az automatizált és az autonóm járműveken keresztül megvalósuló közlekedési bűncselekményekre. Kutatásom során különös figyelmet szántam a bűncselekmény fogalmának két esszenciális elemére, az emberi cselekményre és a bűnösségre, egyúttal annak a kérdésnek a megválaszolására törekedtem, hogy ha a közlekedési bűncselekményt egy autonóm járművet felhasználva követik el, akkor a büntetőjogi felelősség alanya miként határozható meg.

Kulcsszavak: automatizált jármű, autonóm jármű, önvezető jármű, büntetőjog, közlekedési bűncselekmény, ultima ratio, felelősség

When assessing the forms of liability the various legal areas, it may seem at first sight that responding to the criminal liability implications relating to the emergence of autonomous vehicles is the most simple. Currently Chapter XIII of the Act C of 2012 of the Criminal Code (from hereon in CD) defines the various traffic related criminal offences. As culpability is an essential element of the notion of criminal offence, more precisely that the offender commits the crime intentionally or by negligence, therefore applying the statutory provisions of traffic related criminal offences to autonomous vehicles does not seem to make sense. The reason for this statement lies in the fact that the natural person sitting in an autonomous vehicle does not practice control or supervision over the vehicle, and nor is he obliged to do so, therefore assessing culpability is not possible. The driver defines only the destination, the legal and safe operation is however guaranteed by the vehicle, alongside the people defined by the regulations.

* „Az Innovációs és Technológiai Minisztérium, mint Támogató által a TUDFO/51757-1/2019-ITM iktatószámom meghozott támogatói döntése alapján, az NKFIH-830-8/2019. számú Megállapodásban foglaltak szerint, a 2019. évi Tématerületi Kiválósági Program céljainak elérése érdekében költségvetési támogatásból valósult meg.”

As the autonomous vehicles transcend the notion of vehicle driver, also the notion of culpability loses its content in most of the cases of criminal traffic offences, it may seem that a significant proportion of statutory provisions will not be applicable in the future. However, we should not ignore the facts that even autonomous vehicles are not autonomous in compared to humans, as the framework of their development and operation is still defined by numbers of people. This implies that although the interpretation of some of the statutory provisions may not be valid any more, there may still remain some aspects of human conduct related to autonomous vehicles that are deemed significantly harmful to society, therefore criminalisation is required. Such human conduct can provide the foundation for the liability of not only natural persons but also of legal entities.

With respect to the above, culpable human conduct harming or endangering road traffic safety may still form the subject of criminal liability however, it is not obvious, which acts are justified to be sanctioned with the measures of criminal law, hence the assessment of culpability, as a formal question, must precede the assessment of the question of punishability. Therefore as the first step, it needs to be determined which acts are acutely harmful to society, and it can be followed by the amendment or modification of the statutory provisions in force, or the definition of new statutory provisions in case the ones in force are not sufficient.

In the current study I am aiming to analyse criminal liability from the following aspects:

- is the application of criminal law justified, taking its *ultima ratio* character into account;
- have all the elements of statutory provisions of criminal offence materialised, with special attention to human conduct and to culpability.

Besides autonomous vehicles the most developed automated vehicles cannot be ignored either. The autonomous vehicle is the final step of a development process, but the somewhat less developed automated vehicles may bear features that make the above discussed questions valid even before the autonomous vehicles appear on the market. If we consider one end of an imaginary scale as complete lack of automatization, then the autonomous vehicles occupy the other end of the scale. Moving towards autonomous vehicles, not only the role of human intervention is gradually diminishing, but also the opportunity for that, and with that also the control or supervision practiced over the vehicle, and parallel with this the scope of authority of the vehicle is widening, just like the range of circumstances controlled by the vehicle.

Some of the questions posed above will arise even by automated vehicles, which are not classified as autonomous vehicles, but which partially or fully take the burden of controlling the operation of the vehicle from the driver, on certain stretches of the journey. The applicability of the notion of criminal offence can be assessed on its own along the different categories of automated vehicles; the current study focuses only on criminal traffic offences.

Finally, I would like to emphasize that during my research I studied exclusively Hungarian law and literature. The reason for this was, that my goal was not to compare different legal systems and regarding the novelty of the study subject there are not any solid legal background yet.¹ Hopefully, my observations will be beneficial on the long-term, as well, and they could be the base for a more complex comparison of

¹ Generally, the studies of foreign authors deal partly with the subject of criminal liability created by autonomous vehicles, namely when analysing the criminal liability of AI (artificial intelligence) systems. Vö. DOĞAN, Koray (2019) Driverless Vehicles, Robotic Surgery, Industrial Robots and Criminal Liability. Dokuz Eylül Üniversitesi Hukuk Fakültesi Dergisi, Vol. 21, Special Issue (2019) pp. 3219–3252.; MOSECHKIN, Ilya N. (2019) Artificial Intelligence and Criminal Liability: Problems of Becoming a New Type of Crime Subject. Vestnik of Saint Petersburg University Law, Vol. 2019, Issue 3 (2019) pp. 461–476.; MRCELA, Marin – VULETIC, Igor (2018) Criminal Law Facing Challenges of Robotics: Who Is Liable for Traffic Accident Caused by Autonomous Vehicle. Zbornik Pravnog Fakulteta u Zagrebu, Vol. 68, Issue 3–4 (2018) pp. 465–492.; PADHY, Ankit Kumar – PADHY, Amit Kumar (2019) Criminal Liability of the Artificial Intelligence Entities. Nirma University Law Journal, Vol. 8, Issue 2 (July 2019) pp. 15–20.; STANILA, Laura (2019) On the Necessity of Recognizing Artificial Intelligence as Subject to Criminal Law – The Case of Autonomous Vehicles. Journal of Eastern-European Criminal Law, Vol. 2019, Issue 2 (2019) pp. 40–54.

laws, even at European level.

1. Automated and autonomous vehicles

Amongst others, the practice of the European Union also makes a distinction between automated and autonomous vehicles. Automated vehicles apply various technologies, through computerised systems, that support the driver. As opposed to this, an autonomous vehicle is a fully automated equipment which is capable of serving driving functions also without human intervention. This distinction derives from the briefing of the European Parliament, focusing amongst other issues on the challenges that are inherent to, as well as the potential in the automation of vehicles, and the definition of the notions related to this area.² Automated and autonomous vehicles are definitely not the equivalent; autonomous vehicles are the most developed form of automated vehicles.

Nevertheless, automated vehicles can be broken down into further categories, depending on the extent to which the driver is relieved from the control of the vehicle by the driving assistance technology, namely to what extent control over the vehicle is shared between the driver and the vehicle. This categorisation derives from the classification of the *Society of Automotive Engineers* (from hereon it SAE); which is referred to not only in the above mentioned briefing of the European Parliament³ but also in the communication on the mobility strategy of the Commission to the European Parliament.⁴ The SAE is an organisation which aims to create the link between engineers working in the different corners of the world, as well as to support and develop transport, automotive industry and space research.⁵ The categories applied by the SAE are the following:

- lack of automation (Level 0);
- driving assistance (Level 1);
- partial automation (Level 2);
- conditional automation (Level 3);
- high level of automation (Level 4);
- complete automation (Level 5).⁶

The SAE explains that the various levels have been defined on the basis of the extent to which the driver and the vehicle take part in controlling the vehicle.⁷ Moving from the lack of automation to complete automation the tasks of the driver are reducing, while the vehicle gains a growing role in the implementation of the driving manoeuvres.

The SAE classification is not the only one of its kind: the American *National Highway Traffic Safety Administration* (from hereon in NHTSA) operates with in many respect similar notions;⁸ as opposed to the *German Bundesanstalt für Straßenwesen* (from hereon in BASt), which uses a significantly different

² Automated vehicles in the EU. Briefing. European Parliament, January 2016. pp. 1–2.

³ Ibid. pp. 3–5.

⁴ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. On the road to automated mobility: An EU strategy for mobility of the future. European Commission, 17 May 2018. pp. 2–4.

⁵ SAE INTERNATIONAL (2019) About SAE International; Download: <https://www.sae.org/about/> (Last download: 06/09/2019)

⁶ Automated vehicles in the EU. Briefing. op. cit. pp. 3–4.

⁷ SAE INTERNATIONAL (2018) Surface Vehicle Recommended Practice. Taxonomy and Definitions for Terms Related to Driving Automation Systems for On-Road Motor Vehicles; Download: https://www.sae.org/standards/content/j3016_201806/preview/ (Last download: 14/09/2019)

⁸ Preliminary Statement of Policy Concerning Automated Vehicles. National Highway Traffic Safety Administration, 30 May 2013. pp. 4–5.

classification.⁹

2. The ultima ratio character of criminal law

Ultima ratio is a multifaceted notion, appearing in many branches of law however, it is mostly applied in the area of criminal law. Its key point is that criminal law is the ultimate measure in the protection of legal interest.¹⁰ This implies that legislator must thoroughly consider, what kind of acts justify the application of the measures of criminal law.

The justification of the decision 4/2013 (II.21.) of the Constitutional Court explains that *“the societal role of criminal law is to become the ‘sanctioned keystone’ of the entire legal system. Criminal law is the ultima ratio in the legal liability system, namely the criminal sanctions; the role and function of punishment is the protection of the integrity of legal and ethical norms when the sanctions of other branches of law are not applicable. A content requirement deriving from the constitutional limitation of criminal law ensures that that legislator cannot arbitrarily define the range of culpable acts, the necessity of declaring any act as culpable must be assessed using strict measures. The use of those instruments of criminal law necessarily limiting human rights and liberties for the protection of various life conditions, ethical and legal norms can be justified only in the absolutely necessary cases and only in proportionate measure, if the protection of constitutional or from the Constitution deriving, state, social and economic goals and values is not possible in any other way.”*

The content of the *ultima ratio* principle is twofold. On the one hand, it requires that only such unlawful act evoke criminal sanctions, which harm or endanger those protected legal interests most valuable for the society, primarily human life and liberty. On the other hand, we cannot treat the criminal offences with different contents harming the given protected legal interest as equal;¹¹ criminal law therefore is the area of the legal system which is intended to penalise the most grievous acts harming the most important protected legal interests. This justifies the statement that the need for regulation brought along by social and technological development does not necessarily touch upon criminal law; numerous arguments can be listed for both and against further criminalisation.

The accident involving a Tesla Model S, on 7th May 2016, in Williston, Florida, was the first fatal traffic incident which was caused by autopilot. The automated vehicle crashed into the trailer of the lorry crossing the road in the opposite direction (abeam to its course), as due to the strong sunshine neither the vehicle nor the driver liable for the operation of the vehicle noticed it. The lorry collided with the windscreen of the Tesla, the Model S basically ran under the trailer after the collision. Tesla was of the position that besides the fault of the vehicle and the negligence of the driver, the fatal outcome was also down to the fact that the vehicle did not collide with the front or the rear of the trailer, in which cases the safety system of the Model S could have prevented the serious injuries.¹²

On 18th March, 2018 in Tempe, Arizona, an automated Uber, a Volvo SUV, ran over a pedestrian. The victim was crossing the road illegally, pushing her bike by her side, the vehicle did not slow down and as a result caused the death of the 49 year old woman. Although nobody argued that the accident happened on a pedestrian crossing, the vehicle should have noticed the pedestrian entering its field of vision regardless; it remains unclear why it did not happen. Besides, the on board camera clearly proved that the driver of the vehicle did not keep his eyes on the road prior to the collision and noticed only in the last moment that he could not stop the vehicle in time. This was the first accident caused by an automated vehicle

⁹ Rechtsfolgen zunehmender Fahrzeugautomatisierung. Berichte. Bundesanstalt für Straßenwesen, Januar 2012. pp. 11–12.

¹⁰ AMBERG Erzsébet (2019) A büntetőjogi felelősség helye és ultima ratio szerepe a felelősségi alakzatok rendszerében. PhD értekezés. Budapest, Pécsi Tudományegyetem Állam- és Jogtudományi Karának Doktori Iskolája. p. 5.

¹¹ KARSAI Krisztina (2012) Az ultima ration elvről – másképpen. In: HOMOKI-NAGY Mária (szerk.). Sapientia Sat. Ünnepi kötet Dr. Cséka Ervin 90. születésnapjára. Szeged, SZEK Juhász Gyula Felsőoktatási Kiadó. pp. 258–259.

¹² GOLSON, Jordan (2016) Tesla driver killed in crash with Autopilot active, NHTSA investigating; Download: <https://www.theverge.com/2016/6/30/12072408/tesla-autopilot-car-crash-death-autonomous-model-s> (Last download: 04/02/2020)

where a pedestrian lost her life.¹³

On 23rd March, 2018 in Mountain View, California, again a Tesla, a Model X was involved in an accident, as it crashed into the traverse of the motorway and caught fire. The vehicle sensed the hands of the driver on the steering wheel only for 34 seconds in the minute preceding the crash; the driver lost his life. Tesla did not take a position as to why the vehicle did not notice the obstacle.¹⁴

In 2016, 607 fatal road traffic incidents were reported in Hungary, while this figure was 3 206 in Germany and 35 092 in the US.¹⁵ The WHO compiled a global status report on road safety in 2018, which highlighted that 1.35 Million people die in road accidents every year; which is roughly one person every 24 seconds.¹⁶ As 90% of such accidents are the result of some sort of culpable human behaviour¹⁷ – conduct or failing to act – it can be stated that autonomous vehicles will significantly contribute to improving road traffic safety.

Considering the above the question can be posed whether the sanctioning of accidents resulting from the operation of autonomous vehicles under criminal law is justified, taking the *ultima ratio* character of criminal law into account. To phrase it differently: can we talk about such level of danger posed to society where the instruments of misdemeanour law, *ad absurdum* civic law, are not applicable. The three traffic incidents described earlier clearly indicate that, at least so far, automated and autonomous vehicles can cause similar damage as traditional vehicles, therefore the need for the protection of legal interest is still valid. We cannot ignore the fact that the conduct or failing to act endangering the protected legal interest are expected to save more human lives, bodily integrity and health than harm, therefore the societal benefit will exceed the level of threat of the protected legal interest.¹⁸ If the number of road accidents reduces drastically in the future, a realistic expectation may arise for criminal law to withdraw into the background and be used only in cases when it is rightfully justified.

Besides complete decriminalisation, the classification of accidents caused by autonomous vehicles as legal risks might be a potential solution.¹⁹ Legal risk is a reason excluding unlawfulness, which forms an impediment of criminal accountability. Again, it cannot be ignored that if we expand the range of reasons excluding unlawfulness, we *de iure* impose limitations on the right to life, bodily integrity and health.

Reasons excluding unlawfulness are currently regulated either by the Criminal Code or prevail as unwritten law. The reasons excluding unlawfulness based on unwritten law, including consent of the harmed person, disciplinary law and practicing one's job, do not entitle anyone to take other people's lives. It derives from the previous argument that classifying accidents caused by autonomous vehicles as legal risks can only happen through legislation,²⁰ thus serving transparency and ensuring effective prevalence of legal certainty.

The legislator may even decide to reduce the penalties instead of widening the range of reasons excluding unlawfulness, especially in cases when the offence caused by the negligence of the offender does not result

¹³ LEVIN, Sam (2018) Video released of Uber self-driving crash that killed woman in Arizona; Download: <https://www.theguardian.com/technology/2018/mar/22/video-released-of-uber-self-driving-crash-that-killed-woman-in-arizona> (Last download: 04/02/2020)

¹⁴ LEVIN, Alan – BEENE, Ryan (2018) Tesla Model X in California Crash Sped Up Prior to Impact; Download: <https://www.bloomberg.com/news/articles/2018-06-07/tesla-model-x-in-california-crash-spiced-up-seconds-before-impact> (Last download: 04/02/2020)

¹⁵ WORLD HEALTH ORGANIZATION (2018) Global status report on road safety 2018; Download: https://www.who.int/violence_injury_prevention/road_safety_status/2018/en/ (Last download: 05/02/2020)

¹⁶ WORLD HEALTH ORGANIZATION (2018) Road Traffic Injuries: The Facts; Download: https://www.who.int/violence_injury_prevention/road_safety_status/2018/infographicEN.pdf?ua=1 (Last download: 05/02/2020)

¹⁷ ANDORKÓ Imre (2017) Önvezető autók? A jövő elkezdődött!; Letöltés: <http://arsboni.hu/onvezeto-autok-a-jovo-elkezodott/> (Utolsó letöltés: 05/02/2020)

¹⁸ AMBRUS István – KOVÁCS Gábor – NÉMETH Imre (2018) Az önvezető járművek kapcsán felvethető általános büntetőjogi problémák. Jura, 2018/2. sz. p. 17.

¹⁹ AMBRUS István (2019) Az autonóm járművek és a büntetőjogi felelősségre vonás akadályai. In: MEZEI Kitti (szerk.). A büntetőjogi tudományok és az informatika. Budapest – Pécs, Pécsi Tudományegyetem Állam- és Jogtudományi Kar – MTA Társadalomtudományi Kutatóközpont. p. 18.

²⁰ Ibid. pp. 18–19.

in serious damage, potentially only in grievous bodily harm,²¹ or in damage to property not exceeding a certain limit.

3. Applicability of the notion of criminal offence

The Criminal Code defines criminal offence as: “*a criminal offence is an act committed either deliberately or due to negligence, if this law orders to penalise offences committed by negligence as well, which is deemed to be harmful to society, and which is ordered to be penalised by this law.*” Based on the legal definition, the following criteria must be fulfilled in case of every criminal offence:

- human conduct;
- culpability;
- harmfulness to society;
- factualness (disposition).

Due to spatial limitations, the current study will focus only on human conduct and culpability.

When assessing the applicability of the notion of criminal offence, it is worth emphasising especially that we cannot consider automated and autonomous vehicles as equal. Both kinds of vehicles have a common feature, namely that the basic framework of their operation is defined by others however, a significant difference can be observed in connection with the level of role people play within this framework.

Machines can be categorised into three groups according to the level of role people play in the supervision of the operation of the machine:

- full human control;
- supervision by people;
- operation without supervision.²²

The autonomy of robots is growing spectacularly with the development of technology. While in the case of human control machines always operate according to human instructions, the essence of operation without supervision is that there is no human interaction during the implementation of the task, people only provide the necessary conditions, such as information, for the implementation. Parallel with the enhancement of the autonomy of robots, the role of human decision making reduces, humans take on the role of monitoring and supervising the operation of the robots. At the end of the process, robots have complete authority over decision making.²³ In summary, it can be stated that if we want to categorise the robots with differing level of development, we move from equipment controlled and monitored by people to such robots which are almost independent from humans, as they take no more than one kind of limited supervision over themselves.

Automated and autonomous vehicles can easily fit into this model. Traditional vehicles with no automated functions are completely under human control, automated vehicles gradually gain an increasing role in decision making, while autonomous vehicles make decisions and implement every task independently, and the role of humans gets limited to the supervision of intended operation. It is obvious that legal liability cannot be applied in the same way to the vehicles automated to differing extents. The wider the authority of the automated vehicle in the decision making, the less the liability of the natural person operating the vehicle, who shifts from being the driver of the vehicle to the operator of the vehicle, and in finally to its passenger, as we move towards higher levels of automation.²⁴

²¹ AMBRUS – KOVÁCS – NÉMETH op. cit. pp. 18–19.

²² VARGA Attila Ferenc (2013) Gondolatok a robotok önálló döntéshozataláról és felelősségre vonhatóságáról. *Hadtudomány*, 2013/2. sz. p. 12.

²³ Ibid. pp. 12–13.

²⁴ MOLNÁR Anna Gréta (2019) Vezetőből utas, avagy az önvezető járművek büntetőjogi felelősségének megítélése.

It is reasonable to make the distinction between the following categories of vehicles when determining criminal liability:

- traditional vehicles;
- automated vehicles operating under human supervision;
- autonomous vehicles.

In this context, those vehicles are considered traditional vehicles which are either not automated at all or only to a limited extent; the vehicle driver actively contributes the control of the vehicle. In contrast, automated vehicles operating under human supervision are vehicles which have full control on either the whole of the journey or on certain stretches, strictly under the direct supervision of the driver. In the case of autonomous vehicles, the driver is not even required to be present.

Of the three categories described, the latter two can be regarded as novelty. The notion of crime can be fully applied to criminal traffic offences which are committed with the involvement of traditional vehicles. However, if the driver does not take part, furthermore, is not required to take part, in the control of the vehicle, only supervises the operation of the automated vehicle, it is less obvious whether we can talk about human conduct and culpability, and if yes, what is the content of the various elements of the notion of crime.

3.1. Human conduct

A prerequisite of a crime committed is that the behaviour derives from a person, as in it has to be regarded as human conduct.

Wilfulness and impactfulness are conceptual elements of a conduct. Wilfulness is subjective, while impactfulness is objective. Wilfulness is independent from culpability, it refers to the wilful relationship between the offender and the act committed. The essence of it is that the offender commits the conduct or failing to act controlled by their will. In contrast to this, impactfulness refers to the impact of the conduct or failing to act, or the ability to create an impact.²⁵

The wilful character of a conduct cannot always easily be determined. We cannot talk about wilfulness in the following cases:

- reflex movements;
- automatisms;
- spontaneous or anger reactions;
- movements made while unconscious.²⁶

If the vehicle driver commits the criminal traffic offence using an automated vehicle, the wilful character of the conduct, as a prerequisite, can still be assessed. If the driver does not fulfil their supervisory duties in relation to the vehicle, the driver commits a negligence, which according to my stand, can still be assessed under criminal law, without even having to modify or amend the statutory text of criminal traffic offences. However, if the offender uses an autonomous vehicle, then I would argue that the act of the driver cannot be wilful. The obvious reason for this argument is, that as the autonomous vehicle makes and implements all the decisions, and the driver, at least while using the vehicle, is not even required to supervise, therefore we cannot talk about a wilful relationship between the offender and the act causing the offence, nor about offending behaviour.

In: POGÁCSÁS Anett et al. (szerk.). 'Dies diem docet'. Válogatott tanulmányok joghallgatók tollából. Budapest, Pázmány Press. pp. 176–177.

²⁵ DEÁK Zoltán (2017) A kényszer, az erőszak és a fenyegetés fogalma és jelentősége a magyar büntetőjogban. PhD értekezés. Szeged, Szegedi Tudományegyetem Állam- és Jogtudományi Doktori Iskola. pp. 34–35.

²⁶ AMBRUS – KOVÁCS – NÉMETH op. cit. p. 24.

Based on the argument above the question can be posed as to if an autonomous vehicle causes an accident, how can a person's criminal liability determined, if the driver seemingly cannot be made accountable due to the lack of wilfulness and therefore lack of human conduct.²⁷ To phrase it differently: if we believe that the *ultima ratio* character of criminal law is valid in the case of autonomous vehicles, then who are the people who can dogmatically be made accountable.

The subject of criminal liability, at least according to some views, can be the autonomous vehicle itself, however at the moment there is no way of making the vehicle accountable. The main reason behind this is the fact that the autonomous vehicle is not a person, therefore it cannot be the subject of either rights or liabilities; criminal sanctions cannot be applied against vehicles. Nevertheless, it does not mean that autonomous vehicles cannot be endowed with some special kind of legal entity character; it is less obvious though, to what extent being the subject of law would be justified.

First of all, autonomous vehicles do not have the ability to control their will; their decisions are based on software, therefore they can be derived from people.²⁸ It is not argued that legal entities have such abilities however, in case of legal entities being the subject of law is linked to purpose: they serve to satisfy practical needs, more precisely they have some sort of social or economic function. Making autonomous vehicles the subject of law would not serve any underlying purpose. Due to the lack of wilfulness we cannot talk about culpability, and the lack of culpability excludes criminal liability. The fact that autonomous vehicles do not possess the ability to control their will further complicates the issue, therefore the preventive function of criminal law does not prevail. Even if we put the events preceding the accident down to the vehicle, there is no sanction that would help preventing similar accidents.²⁹

Arguing from the point of other branches of law, making automated vehicles subjects of the law may obviously be justified, but it can be stated that criminal law would currently not be able to handle criminal offences "committed" by autonomous vehicles. Two conditions being fulfilled at the same time would be necessary to make criminal law applicable to accidents caused by vehicles endowed with legal entity. On the one hand, autonomous vehicles would need to possess a special kind of – artificial – consciousness, which would not only enable them to make individual decisions, but would also endow them with insightfulness, that would then justify their ability to control their will independent from people and their ability to commit offences. On the other hand, the system of criminal sanctions would need to be amended with such penalty schemes, which are capable of modifying the content of the artificial mind, namely implement the preventive aim of criminal law, restraining the subjects of law from violating the law in the future. These arguments presuppose the emergence of robots growing independent from people, thinking and acting independently, and being liable for their behaviour.

According to some points of view, accidents caused by autonomous vehicles can justify the criminal liability of some kind of legal entity as well. The improper operation of the vehicle may be traced back to the procedure used by the manufacturer of the vehicle, or even to the malpractice of the manufacturers of individual parts such as sensors, or to the developers of the software.³⁰ The principle reason for criminal liability of legal entities is that legal entities are often the beneficiaries of criminal offences that are committed by natural persons in the interest of, or for the benefit of legal entities.³¹ However, legal entities are a fiction which due to the lack of ability to act, and with that to the lack of ability to have an insight, cannot perform harmful acts, therefore their liability cannot be justified based on the Criminal Code. In contrast, the CIV. Law of 2001 on criminal measures that can be applied against legal entities (from hereon in LECC) enables the legislators to sanction legal entities if they committed a criminal offence.

²⁷ FRANK Máté (2018) A büntetőjogi felelősségre vonás problematikája az önvezető gépjárművek tekintetében. In: Új Nemzeti Kiválóság Program 2017/2018 Tanulmánykötet. Győr, Széchenyi István Egyetem. pp. 66–67.

²⁸ KLEIN Tamás – TÓTH András (2018) A robotika egyes szabályozási kérdései. In: HOMICSKÓ Árpád Olivér (szerk.). Egyes modern technológiák etikai, jogi és szabályozási kihívásai. Budapest, Károli Gáspár Református Egyetem Állam- és Jogtudományi Kar. p. 109.

²⁹ MOLNÁR op. cit. pp. 178–179.

³⁰ FRANK Máté (2018) A büntetőjogi felelősségre vonás problematikája az önvezető gépjárművek tekintetében. Diskurzus, 2018/1. sz. pp. 17–18.

³¹ FRANK Máté (2018) Az önvezetés büntetőjogi korlátai az angolszász joggyakorlat tükrében. Diskurzus, 2018/2. sz. pp. 16–17.

Section 2 § (1) of LECC states that the application of a measure defined by law against a legal entity is justified, if committing the offence aimed to achieve, or resulted in the benefit of the legal entity, or the offence was committed by using a legal entity. Another criterion of criminal liability of a legal entity is that the criminal offence is committed by a person acting in the scope of the legal entity, such as a senior executive, member, employee, director, or member of the supervisory board, or somebody acting on behalf of the above; as section 2 § (2) of LECC indicates the person has to be aware of the criminal offence being committed. Based on section 3 § (2) of LECC the following measures can be applied against legal entities:

- terminating the legal entity;
- limiting the scope of activities of the legal entity;
- fine.

Above all, it must be noted that the LECC is in fact not about the criminal liability of legal entities. A legal entity, as a fiction, cannot implement harmful acts, therefore against a legal entity only the application of measures can be justified, however these measures defined by law do not relate strongly to the area of criminal law. Quoting Zsanett Fantoly's argument: *"in fact it is not about the potential sanctions to be imposed on legal entities, but about the criminal court applying civic law and administrative law enforcement sanctions against legal entities on an objective basis, without assessing the culpability of the legal entity as an individual subject of law. Therefore, we can refer to the sanctioning of the legal entity rather than to their liability."*³²

Statutory provision can be established in two cases: when the person in a certain relationship with the legal entity defined by the LECC commits a deliberate criminal offence, which serves the interest of the legal entity, or the person uses the legal entity as well to commit the offence, and when the person in a direct relationship with the legal entity was aware of the offence committed with the use of the legal entity or for the interest of the legal entity. This also indicates that a legal entity, as it is a fiction, cannot be the offender of a criminal offence, instead the offending behaviour of a natural person, accounted for the legal entity, will form the basis for liability. At the same time, the LECC allows for the sanctioning of legal entities only in connection with deliberate criminal offences, therefore criminal offences caused by *negligence* are outside the scope of the application of the law.³³ Both the ancillary character of liability and the lack of liability for criminal offences caused by negligence limit the cases where the LECC can be applied.

As the LECC does not acknowledge the individual criminal liability of legal entities, if the natural person offender cannot for any reason be identified, then applying legal measures against legal entities is not justified. An issue of similar kind relates to organisational crime, as in that case it is in general difficult to fully determine the criminal liability of a given natural person. Quoting Norbert Kis's argument: *"the duty of care violations that are in a causal relationship with the harmful outcome are 'dispersed' in the liability-delegation network of the internal rules and regulations, the malpractices of different importance occurring in the various units of the organisation are cumulated in the harmful outcome."*³⁴ Hence, contribution to the occurrence of the harmful outcome is 'shared' by the people involved in the development of the autonomous vehicle, making it more difficult to determine the unambiguous culpability of any of these people.

Based on the discussions above, I am of the opinion that an accident caused by an autonomous vehicle does not, or only to a rather limited extent, allow for the application of measures based on the LECC. However, several arguments can be listed for the deployment criminal liability to legal entities. The appropriate protection of legal interest prioritized by criminal law cannot be ensured by the sanctioning of culpable natural persons; and the same applies for effective prevention.³⁵ Even though more forceful actions against legal entities may be desired, it would necessitate the establishment of the *direct* criminal liability of legal entities, so that the 'collective fault' manifested within the organisation becomes the source of criminal liability of the organisation, rather than the accountable behaviour of any natural person. It is

³² FANTOLY Zsanett (2007) A jogi személyek büntetőjogi felelőssége európai kitekintéssel. PhD értekezés. Szeged, Szegedi Tudományegyetem Állam- és Jogtudományi Kar. p. 152.

³³ Ibid. p. 154.

³⁴ KIS Norbert (2005) A bűnösségi elv hanyatlása a büntetőjogban. Budapest, Unió Kiadó. pp. 257–258.

³⁵ Ibid. p. 247.

an eternal question whether the amendment of civic law and administrative sanctions with prejudices of criminal nature is justified or not.

A natural person can also be the subject of criminal liability instead of the autonomous vehicle or a legal entity. The driver of the vehicle is not even obliged to supervise, therefore there is no wilful relation between the offender and the offending behaviour. As a principle, we cannot talk about criminal liability due to the lack of human conduct, therefore the need for a dogmatic solution arises that can bridge this gap relating wilfulness.

Criminal liability of the offender can be based on the culpable act preceding the time of the offence. Although wilfulness, and also culpability, must be assessed at the time the offence was committed, the case of *actio libera in causa* is an exception: culpability can be determined for a point in time preceding the committing of the offence.³⁶ A typically quoted example of this is when a mother puts the baby by her side in the bed, knowing that she usually sleeps restlessly, and she crushes the baby to death in her sleep; it does not impact on criminal liability that, when the outcome happened, the offender was not able to implement wilful behaviour.³⁷ The offender is similarly liable if they commit the criminal offence under the influence of drugs.

The question arises from the discussions above, how and to what extent the criminal liability of a natural person can be determined if the accident can be derived from the negligence of the maintenance and servicing duties of the driver.³⁸ I am of the opinion, that if the driver does not fulfil their monitoring duties deriving from the operation of the vehicle prior to the use of the autonomous vehicle, or the maintenance prescribed by the manufacturer, including updating the software, does not take place due to the fault of the driver, then failing to act could be sanctioned by criminal law as well. It is worth considering though that the legislator should regulate the unlawful act relating to autonomous vehicles, if they pose significant danger to society, in the framework of *sui generis* facts.

3.2. Culpability

Culpability of the offender is another prerequisite of a criminal offence; only deliberate or negligent human conduct can be the basis for criminal liability.

As we cannot talk about human conduct due to the lack of wilfulness, the question of culpability can also only be assessed in cases where the act committed is wilful. Although culpability of the offender cannot be concluded from the wilful character of the conduct,³⁹ culpability presupposes wilfulness; it is beyond imagination that there is no psychological connection of some sort between the offender and the deliberate act or the act caused by negligence.

The distinction between automated vehicles operating under human supervision and autonomous vehicles is still justified. As nobody practices control over autonomous vehicles, at least not during their operation, not only is that disputable whether we can talk about wilfulness, but also whether the committing behaviour takes place or not. Hence we do not arrive to the question of culpability at the level of autonomous vehicles: the culpability of the offender can only be assessed if the wilful character of the act can be proved.

Automated vehicles operating under human supervision, as opposed to autonomous vehicles, still require the driver to have constant control over the vehicle. This means that if the driver does not fulfil their controlling duties, and as a result the automated vehicle causes an accident, then the failing to act can be the basis for criminal liability, as the wilful relationship between the offender and the offence is indisputable. Another prerequisite of criminal sanctioning is the culpability of the offender. As failing the controlling duties is considered as a human conduct, the culpability of the driver of the automated vehicle

³⁶ TOKAJI Géza (1972) Adalékok a bűncselekményfogalom felépítéséhez. Szeged, Szegedi József Attila Tudományegyetem Állam- és Jogtudományi Kara. p. 43.

³⁷ Ibid.

³⁸ AMBRUS – KOVÁCS – NÉMETH op. cit. p. 26.

³⁹ DEÁK op. cit. pp. 34–35.

has an independent meaning, regardless of wilfulness.

The driver of the automated vehicle, based on the case of *actio libera in causa*, can be made accountable for their act preceding the accident. Besides, the legislator can sanction unlawful acts which are extremely harmful to society in the framework of *sui generis* facts, similarly to autonomous vehicles. Due to the controlling duty relating to automated vehicles, not only the act preceding the criminal offence, but also the driver failing the controlling duty can be the basis for criminal liability.

It must be noted that in many cases the accident is unavoidable even if the driver of the automated vehicle fulfils their controlling duties. The reason behind is that the reaction time of a person cannot be quick enough in every traffic situation to take back the control over the vehicle, even if the driver practices constant supervision. Therefore it is worth differentiating between two categories of vehicles within automated vehicles under human supervision.

Some automated vehicles warn the driver that they must to take back the control over the vehicle. In such cases, we can talk about the culpability of the driver if they ignore the warning of the vehicle for any reason. For example, if the driver falls asleep behind the steering wheel, and therefore does not notice that the vehicle requires intervention, then the accident caused by the failure of taking back the control can be the basis for criminal liability. It must be emphasised that in this case the driver is not obliged to observe road traffic in its entirety; it is sufficient if the driver ‘communicates’ with the vehicle.

Those vehicles form the other group of automated vehicles in question which do not signal it to the driver if they require taking back the control; it is the duty of the driver to constantly supervise the operation of the vehicle, and to notice the need for intervention. It is a difficult task to determine what level of care is expected from the driver, i.e. when we can state that the natural person sitting behind the steering wheel has committed a culpable act. It is easy to see that compared to the driver of a traditional vehicle, the psychological pressure is much higher on the driver who is not obliged to keep his hands on the steering wheel however, has to be constantly prepared that the vehicle may cause an accident if the driver does not steer away or pushes the breaks at the right time. The accidents described earlier indicate however, that the catastrophe can sometime be derived back to human failure.

In my opinion, if the danger could have been observed in time with due care and attention, and the accident could have been avoidable, then it is obvious that the driver did not show due care and attention; in such cases the culpability of the driver is indisputable. However, if the driver showed due care and attention; and the accident was still unavoidable, then it can result only from a fault during taking back of the control, deriving from the actions of the driver, or the operational failure of the automated vehicle. The culpability of the driver does not cover either the former or the latter fault, not including the failure to update the software. Therefore the criminal liability of the driver is dependent only on the extent to which the accident could have been avoided if the driver was fulfilling its controlling duties, i.e. showing due care and attention. If the driver had their constant attention on the vehicle, but the incident requiring taking back the control happened so suddenly that the driver was not able to take back the control, then in my opinion criminal sanctions cannot be applied against the driver due to the lack of negligence.

4. Conclusion

Criminal law is the ultimate measure in the hands of the state to control the acts and behaviour most harmful to society. Taking this into consideration, and with attention to road accident statistics, as well as the potential in autonomous vehicles, significant arguments can be listed for the decriminalisation of criminal traffic offences. The decision therefore is in the hands of the state, and the choice requires legal policy rather than legal dogmatic arguments.

As for the applicability of the notion of criminal offence, I am of the opinion that the emergence of autonomous vehicles does not result in the need to the reform of the dogmatic system of criminal law. The discussions above demonstrate that the person liable for an accident caused by an autonomous vehicle may be determined based on the principle of *actio libera in causa*, if the driver does not fulfil their maintenance duties for example. The notion of criminal offence can still be applied; it is a more important question what happens in cases where nobody can be held criminally liable for an accident under the

regulations in force, and what can the legislator do, if they wish to act.

First of all, the legislator can waive the claim to chase the acts involving autonomous vehicles, referring to the reducing risk to society. Instead, the legislator can decide to reform the notion of criminal offence, making it possible to determine criminal liability of the offender even if wilfulness and culpability are lacking. Finally, the legislator can also define special statutory provisions, which sanction particularly failing to act preceding the accidents caused by autonomous vehicles, indirectly contributing to the accident.

The time may come when artificial intelligence will be able to correct every human fault and error however, I believe until then the latter solution is the way forward.

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