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STRICT LIABILITY FOR DAMAGE CAUSED BY SELF-DRIVING VEHICLES: THE ESTONIAN PERSPECTIVE

Taivo Liivak

Doctoral Candidate in Information Technology Law
University of Tartu, School of Law (Estonia)

Contact information
Address: Näituse 20, Tartu 50409, Estonia
Phone: +372 7471321
E-mail address: taivo.liivak@ut.ee

Janno Lahe

Professor; Dr.
University of Tartu, School of Law (Estonia)

Contact information
Address: Näituse 20, Tartu 50409, Estonia
Phone: +372 7375992
E-mail address: janno.lahe@ut.ee

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ABSTRACT

In the case of damage caused by a conventionally driven vehicle, it is usually possible in EU Member States to subject the possessor/controller of the vehicle to heightened tortious no-fault liability, i.e. strict liability. The development and possible introduction of self-driving vehicles pose a challenge also for tort law, because it is unlikely that self-driving vehicles will not cause any damage to third parties. With the application of strict liability in mind, this article attempts to identify possible differences between damage caused by a conventional vehicle as opposed to that caused by a self-driving vehicle. In light of this developing technology the key

legislative question to be answered is whether the introduction of self-driving vehicles calls for, among other things, the revision of strict liability rules. Answers to these questions are sought mainly based on Estonian tort law.

KEYWORDS

Self-driving vehicles, self-driving cars, autonomous vehicles, autonomous and connected vehicles, driving automation, strict liability, no-fault liability

NOTE

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INTRODUCTION

It is anyone's guess when fully self-driving vehicles will become available worldwide. Yet we know for a fact that driving automation technologies are being actively developed not only by technology giants and established car manufacturers, but numerous smaller developers,[1] a few of them also in Estonia.[2] For several years now, fully automated delivery robots developed by Starship Technologies have been rolling around in Tallinn, the capital of Estonia.[3] In the summer of 2017, a fully automated bus transported passengers in Tallinn, albeit on a short and dedicated route.[4]

For the purposes of this article, a self-driving vehicle means a fully autonomous vehicle where all the people on board are merely passengers (i.e. there is no driving wheel or driver).[5] Regardless of whether self-driving vehicles will ever be engaged in conventional traffic or used in some way for specially designated routes separated from conventional traffic, it is not plausible that these vehicles will ever be developed to such a high level of safety that damage to third parties by such vehicles is completely precluded under any circumstances (for example, in the case where the software of the vehicle is hacked). Furthermore, given the laws of physics, a self-driving vehicle cannot come to a halt in an instant either. On top of that, a self-driving vehicle may find itself in a dilemma situation where it needs to "choose" whom to harm.[6]

Therefore, one is bound to wonder who can be held liable for causing damage with a self-driving vehicle, and upon what legal grounds. Even though, in principle, the application of contractual liability for such damage cannot be precluded, the key question remains that of the application of tort law. In the framework of the provisions of the Estonian Law of Obligations Act (LOA),[7] one can distinguish between

[1] For further information see "Bloomberg Aspen Initiative on Cities and Autonomous Vehicles" // https://avsincities.bloomberg.org.
[2] For further information see the website of the self-driving car project of TalTech at http://iseauto.ttu.ee/en/mainpage/; and Krõõt Nõges, "TalTech is establishing co-operation with the US on developing self-driving cars" // https://www.taltech.ee/taltech-is-establishing-co-operation-with-the-us-on-developing-self-driving-cars.
[3] For further information see the developer's website at https://www.starship.xyz/company/. In connection with this, the Estonian Traffic Act (TA) was amended in July 2017, adding the definition of a self-driving delivery robot, which means a partially or fully automated or remotely controlled vehicle which moves on wheels or another chassis that is in contact with the ground, uses sensors, cameras or other equipment for obtaining information on the surrounding environment and, based on the obtained information, is able to move partially or fully without being controlled by a driver (clause 68^1 of TA § 2).
[4] Government Office EU Secretariat, "Driverless buses arrive in Tallinn" // https://www.eu2017.ee/news/press-releases/driverless-buses-arrive-tallinn.
[5] For a more detailed discussion on the technological and safety aspects of self-driving cars see Taivo Liivak, "What Safety are We Entitled to Expect of Self-driving Vehicles?" *Juridica International* 28 (2019) // https://doi.org/10.12697/JI.2019.28.11.
[6] For further information on the dilemma situation see, for instance, Philipp Weber, "Dilemmasituationen beim autonomen Fahren," *Neue Zeitschrift für Verkehrsrecht* 6 (2016).
[7] *Võlaõigusseadus (Law of Obligations Act)*, RT I 2001, 81, 487; RT I, 20.02.2019, 2. Riigi Teataja (State Gazette) [in Estonian; unofficial English translation available at: https://www.riigiteataja.ee/en/eli/507032019001/consolide].

fault-based general tort liability (LOA § 1043 *et seq*), strict liability (LOA § 1056 *et seq*) and product liability (LOA § 1060 *et seq*). Strict liability is no-fault liability for causing damage with a source of a greater danger. Be it damage caused by a conventional vehicle or a self-driving vehicle, it is most relevant to look at strict liability rules that provide for the easiest solution in terms of holding the possessor or operator of the vehicle liable.

To join in the global debate and contribute to solving the driving automation liability conundrum, this article seeks to answer the question of whether there is, from the point of view of application of strict liability laid down in the Estonian LOA, any difference between whether damage has been caused by a conventional vehicle or a self-driving vehicle. In other words, is the prerequisite for the introduction of self-driving vehicles in Estonia, among other things, revision of its strict liability rules or are these are already up for the challenge of self-driving vehicles?

The article does not focus on liability associated with self-driving cars based on rules governing the general composition of tort or product liability.[8] Since Estonian tort law has been inspired by German law, its amendment proposals, legal writings and case-law, the article also references German law.

All Member States of the European Union have made it compulsory for motor vehicles to have a liability insurance contract.[9] This means that damage caused to the injured party is indemnified by the insurer, while the possessor, operator or driver of the motor vehicle is usually not the one to ultimately bear the damage caused. Presumably, self-driving vehicles should be subject to the motor insurance obligation as well. However, even upon indemnification of damage by the insurer it is still important whether and on what grounds the driver or possessor of the damage-inflicting vehicle is liable towards the injured party, because the insurer's obligation to indemnify is based on the liability of the tortfeasor.[10]

[8] For further information on fault-based general tortious liability see Taivo Liivak and Janno Lahe, "Delictual Liability for Damage Caused by Fully Autonomous Vehicles: The Estonian Perspective," *Masaryk University Journal of Law and Technology* 12 (1) (2018) // https://doi.org/10.5817/MUJLT2018-1-3. On product liability see Taivo Liivak, "Liability of a Manufacturer of Fully Autonomous and Connected Vehicles under the Product Liability Directive," *International Comparative Jurisprudence* 4 (2) (2018) // https://doi.org/10.13165/j.icj.2018.12.008.

[9] See *Directive 2009/103/EC of the European Parliament and of the Council of 16 September 2009 relating to insurance against civil liability in respect of the use of motor vehicles, and the enforcement of the obligation to insure against such liability*, OJ L 263, 7.10.2009, 11–31.

[10] For instance, subsection 1 of § 23 of the *Estonian Motor Insurance Act (liikluskindlustuse seadus*, RT I, 11.04.2014, 1; RT I, 13.03.2019, 2 [in Estonian; unofficial English translation available at: https://www.riigiteataja.ee/en/eli/526032019008/consolide) specifies the extent to which the insured person must bear liability towards the injured person in order to trigger the motor insurer's obligation to indemnify the damage. On the prerequisites and scope of the liability of the motor insurer see Janno Lahe, "Estland": 233−235. In: Werner Bachmeier, ed. *Regulierung von Auslandsunfällen. 2. Auflage* (Nomos Verlagsgesellschaft, 2017); Janno Lahe, Olavi-Jüri Luik, and Martti Merila, *Liikluskindlustuse seadus. Kommenteeritud väljaanne* (Juura, 2017), 98-100.

1. PREREQUISITES FOR THE APPLICATION OF STRICT LIABILITY

Strict liability is liability for damage caused by a source of a greater danger, which does not depend on fault. H. Koziol has noted that strict liability is liability for dangerousness.[11] The LOA's strict liability provisions are structured in such a manner that § 1056 contains the general composition of strict liability, while §§ 1057-1060 set out the special compositions of strict liability. The latter include, among other things, the strict liability of the direct possessor of a motor vehicle: the direct possessor of a motor vehicle is liable for any damage caused upon the operation[12] of the vehicle. Subsection 1 of LOA § 1056 limits the application of all strict liability compositions to cases where a source of a greater danger (in this context, the operation of a motor vehicle) has killed a person or caused a bodily injury or health damage or property damage.

The application of no-fault liability to damage caused by a motor vehicle is widespread in Europe. In countries where there are no respective strict liability rules, a result similar for the injured party is reached either with the help of an insurance scheme or by raising the required standard of care.[13]

> In German law, strict liability relating to a motor vehicle is not provided for in the *Bürgerliches Gesetzbuch* (BGB), but in § 7 of the *Strassenverkehrsgesetz* (StVG),[14] according to subsection 1 of which the liability of a *keeper* of the vehicle does not depend on fault. However, the liability of the driver is fault-based (subsection 1 of StVG § 18). The application of the liability provided for in StVG § 7 is limited to cases where the operation of a motor vehicle has caused a person's death, bodily injury or health damage or property damage. German law does not provide for a general composition of strict liability.[15]

In the case of strict liability, the act or fault of the tortfeasor are irrelevant. The determining factor is whether the harmful consequence was caused by the manifestation of a risk characteristic of the object or activity. Thus, upon holding the operator of a motor vehicle (i.e. the person controlling it) liable it is of no relevance whether they violated the traffic rules by engaging in traffic or whether they were at fault when doing it. The Estonian Supreme Court has also held that the causing of

[11] Helmut Koziol, *Basic Questions of Tort Law from a Germanic Perspective* (Jan Sramek Verlag, 2012), 234.
[12] The Estonian Supreme Court has held that damage is caused upon operating a motor vehicle, above all, when it is caused by the purposeful use of the vehicle as a motor vehicle in traffic. The slow movement of a vehicle or, in exceptional circumstances, the static status of a vehicle on the road, may be considered operating the vehicle (see the judgment of the Civil Chamber of the Supreme Court in case no 3-2-1-7-13, 19 March 2013).
[13] Christian von Bar, *Principles of European Law: Non-Contractual Liability Arising out of Damage Caused to Another* (Bern & Munich: Sellier European Law Publishers, Bruylant, Stämpfli Publishers Ltd., 2009), 703.
[14] Available at: http://www.gesetze-im-internet.de/stvg/.
[15] For a brief overview of discussions on the general clause of strict liability in European tort law see Helmut Koziol, *supra* note 11, 236–238.

damage by a source of a greater danger means that damage is suffered as a result of the realisation of a risk characteristic of a source of a greater danger, i.e. as a result of the manifestation of a heightened threat characteristic of a source of a greater danger stemming from the object or activity.[16]

The first question that can be raised in the context of self-driving vehicles is whether a self-driving vehicle is in fact a motor vehicle for the purposes of LOA § 1057. The LOA does not set out a legal definition of the motor vehicle. The definition can be found from clause 40 of § 2 of the Traffic Act (TA)[17]: 'motor vehicle' means a vehicle that is powered by an engine, except for an engine-powered vehicle designated for use solely by a person with reduced mobility, an electric cycle, a self-balancing vehicle, a mini moped, a self-driving delivery robot, an off-road vehicle, a tram and a vehicle with a manufacturer speed of no more than six kilometres per hour. Thus, the aforementioned self-driving delivery robots are not considered motor vehicles for the purpose of the TA. It is debatable whether self-driving vehicles fall under the definition of a self-driving delivery robot set out in clause 68^1 of § 2 of the TA.

Be that as it may, it is not a crucial issue, because the motor vehicle definition given in LOA § 1057 is broader than the definition set out in the TA. The LOA's provision also refers to aircraft. Thus, one does not have to rely solely on the motor vehicle definition given in the TA. It can be argued that, regardless of the TA, a self-driving vehicle should be considered a motor vehicle for the purposes of LOA § 1057.

Where damage is caused by a self-driving vehicle it is, besides LOA § 1057, also possible to apply the general composition of strict liability provided for in LOA § 1056. The first sentence of subsection 1 of § 1056 of the LOA states that where damage is caused as a result of a danger characteristic of an especially dangerous thing or activity, the person who controls the source of danger is liable for causing the damage regardless of the person's fault. The first sentence of subsection 2 of § 1056 of the LOA states that a thing or activity is deemed to be a source of a greater danger where, due to its nature or the substances or means used therein, major damage or frequent damage may be suffered even where the level of care expected of a professional is exercised.

The courts have a wide margin of discretion as to what objects or activities may be considered sources of a greater danger on the basis of the provision. Nevertheless, self-driving vehicles quite clearly can be considered a source of a greater danger. It is a separate issue whether the absence of a driver in a self-driving vehicle increases

[16] See the judgment of the Civil Chamber of the Supreme Court in case no 3-2-1-161-10, 2 March 2011.
[17] *Liiklusseadus* (*Traffic Act*), RT I 2010, 44, 261; RT I, 15.03.2019, 1. Riigi Teataja (State Gazette) [in Estonian; unofficial English translation available at: https://www.riigiteataja.ee/en/eli/525032019002/consolide].

or decreases its dangerousness. If there is no driver who would be standing by at all times to take over control of the vehicle at any moment in order to, for example, fill in the gaps or errors in the vehicle's software, the absence of a driver could be considered a factor increasing dangerousness. On the other hand, traffic accidents largely occur due to human error[18] and, therefore, the absence of a driver could be seen as a dangerousness-reducing factor. It cannot be precluded that the safety of self-driving vehicles will at some point reach a level where accidents are almost completely precluded. In such an event there would perhaps no longer be any reason for treating self-driving vehicles as sources of a greater danger.

In summary, it can be noted that at the level of the prerequisites for the application of strict liability there are no aspects that do not allow for the application of LOA § 1057 or 1056 to self-driving vehicles (similarly to conventional vehicles).

2. PERSONS SUBJECT TO STRICT LIABILITY

2.1. DIRECT POSSESSOR OF A SELF-DRIVING VEHICLE

In the context of application of strict liability, an intriguing question can be raised: who can be held liable based on the strict liability rules? As noted above, on the basis of LOA § 1057 only the direct possessor of a motor vehicle can be held liable.

It follows from subsection 1 of § 33 of the Law of Property Act (LPA)[19] that a possessor is a person under whose actual control a thing is. Subsection 2 of the same section stipulates that a person who possesses a thing on the basis of a commercial lease, tenancy, deposit, pledge or other similar relationship which entitles the person to temporarily possess the thing of another person is the direct possessor, while the other person is the indirect possessor. According to the case-law of the Supreme Court, LOA § 1057 imposes liability on, above all, the person who has the actual control (be it on a legal ground or not) over a motor vehicle. In other words, the person who controls the vehicle — i.e. decides where and when the vehicle moves — bears costs and economic risks related to the vehicle, and enjoys the benefits of using the vehicle.[20]

In the context of German StVG § 7, the natural or legal person who has the right to dispose of the vehicle and who exercises the right as they see fit can be

[18] See, for example, Cristoph Grote, "Connected vehicles will enhance traffic safety and efficiency" // https://www.europeanfiles.eu/digital/connected-vehicles-will-enhance-traffic-safety-efficiency.
[19] *Asjaõigusseadus* (*Law of Property Act*), RT I 1993, 39, 590; RT I, 29.06.2018, 1. Riigi Teataja (State Gazette) [in Estonian; unofficial English translation available at: https://www.riigiteataja.ee/en/eli/502012019009/consolide].
[20] Judgment of the Civil Chamber of the Supreme Court in case no 3-2-1-7-13, 19 March 2013.

considered the keeper of a motor vehicle (*Fahrzeughalter*). The motor vehicle keeper bears costs related to the vehicle and reaps the benefits arising from the vehicle.[21]

Thus, an answer to the question of who can be held liable based on LOA § 1057 largely depends on how self-driving vehicles will actually come to be used. If the purchase and sale of future self-driving vehicles remains similar to that of the current conventional vehicles, the person who acquires a self-driving vehicle becomes, in general, its direct possessor as well.

However, it may well happen that companies will merely provide a transport service using self-driving vehicles and individuals will not be able to acquire them. Such a service may resemble the conventional taxi service. If a self-driving vehicle causes a traffic accident during the provision of such a transport service, one can raise the question of who the direct possessor of the vehicle at the moment of the accident was. It can be argued that, since a customer of the conventional taxi service does not transform into the direct possessor of the vehicle at the time of receiving the service, the same does not happen in the case of a self-driving vehicle. This means that the person receiving the service is not liable for the damage under LOA § 1057. Above all, the company providing the transport service is liable. Thereby it is irrelevant whether the respective company is the owner of the vehicle that caused damage or possesses the vehicle on the basis of, for instance, a lease contract. In the latter case, the owner of the vehicle is the indirect possessor of the vehicle to whom LOA § 1057 does not apply either.

In addition, the driver of a motor vehicle cannot always be considered the direct possessor of the vehicle. It follows from subsection 3 of § 33 of the LPA that the possessor is not a person who exercises actual control over a thing in accordance with the orders of another person in their household or business. Such so-called "servant of possession" is, for example, an employee who uses a vehicle to perform the tasks given by the employer. In principle, it may happen in the case of a self-driving vehicle that the employee uses it for performing certain employment tasks. In such an event, LOA § 1057 is not applicable to the employee either.[22] At the same time the servant of possession may still be held liable in accordance with the provisions governing general tortious liability. This may not prove doable in practice, because the employee's liability would usually be precluded owing to the absence of their fault.

[21] *Case no. VI ZR 108/81*, Judgment, 22 March 1983, Civil Senate, Federal Court of Justice of Germany [short reference in German case-law: BGH NJW 1983, 1492] // https://www.prinz.law/urteile/bgh/VI_ZR_108-81.
[22] See also Paul Varul, Irene Kull, Villu Kõve, and Martin Käerdi, *Võlaõigusseadus III. Kommenteeritud väljaanne* (Juura, 2009), 696.

2.2. PERSON CONTROLLING A SELF-DRIVING VEHICLE AS A SOURCE OF A GREATER DANGER

As noted above, the Estonian LOA also contains the so-called general composition of strict liability. It is a flexible solution that enables the courts to keep up with the times, declaring technologies whose safety is not yet sufficiently proven to be sources of a greater danger. On the basis of the general composition of strict liability, the person controlling a source of a greater danger can be held liable.

It should be pointed out that the definition of a person controlling a source of a greater danger set out in subsection 1 of LOA § 1056 does not overlap with the definition of the direct possessor of a motor vehicle under LOA § 1057. Thus, it cannot be precluded that a person in a self-driving vehicle (e.g. an employee) who cannot be qualified as the direct possessor of the motor vehicle under LOA § 1057 can still be considered a person controlling the source of a greater danger within the meaning of subsection 1 of LOA § 1056. Even though this position has not been explicitly confirmed by Estonian case-law, a respective discussion is fuelled by a decision of the Estonian Supreme Court where the court held that a person who is riding a horse but is simultaneously not the keeper of the animal for the purposes of LOA § 1060, can be considered a person controlling a source of a greater danger under subsection 1 of LOA 1056.[23]

By the same token, it should not necessarily be precluded that the owner of a vehicle who is not its direct possessor can be the person controlling the source of a greater danger. A respective question could be raised, for instance, in the event of the insolvency of the direct possessor.

In light of the aforementioned discussion of the definition of a person controlling a source of a greater danger one should nevertheless not draw the conclusion that a person receiving transport service could be considered a possessor of a self-driving vehicle for the purposes of LOA § 1056. The receipt of temporary service does not give a person any right or opportunity to *control* the self-driving vehicle.

3. CIRCUMSTANCES PRECLUDING STRICT LIABILITY

The application of strict liability, in particular, LOA § 1057 is not unlimited. LOA § 1057 provides for five exceptions whereby the strict liability of the direct possessor

[23] Judgment of the Civil Chamber of the Supreme Court in case no 3-2-1-27-07, 18 April 2007. The application of the general composition of strict liability (LOA § 1056) may be precluded by the fact that the injured person was somehow linked to the source of a greater danger. In the same decision, the Supreme Court noted that persons who participate in controlling a source of a greater danger, temporarily take the source under their control or benefit from controlling the source are not, in the light of the principle of good faith, entitled to demand that the person controlling the source of a greater danger compensate for the damage caused to them based on provisions governing strict liability.

of a motor vehicle is not applicable. Under clauses 1 to 5 of LOA § 1057, the respective provision does not apply where: 1) the damage is caused to a thing that is being transported by the motor vehicle and not being worn or carried by a person in the vehicle; 2) the damage is caused to a thing deposited with the possessor of the motor vehicle; 3) the damage is caused by force majeure or by an intentional act on the part of the injured person, unless the damage is caused upon operation of an aircraft;[24] 4) the injured person participates in the operation of the motor vehicle; 5) the injured person is carried without charge and outside the economic activities of the carrier.

German law provides for the exclusions of the application of StVG § 7 in StVG § 8 whose subsections 2 and 3 are similar to clauses 1 and 4 of LOA § 1057. Under subsection 1 of StVG § 8, the provisions of § 7 do not apply also where the accident was caused by a motor vehicle that cannot run faster than 20 kilometres per hour or by a trailer attached to such a vehicle at the time of the accident.

In a situation where LOA § 1057 is not applicable, it is possible to apply general fault-based tortious liability towards the direct possessor of a motor vehicle, but in the case of self-driving vehicles it will usually be hindered by the issue of fault or, more precisely, the absence of fault.[25] Thus, while, as regards conventional vehicles, the preclusions set out in LOA § 1057 have not caused any noticeable problems (because the direct possessor or the driver of a motor vehicles can nearly always be held liable on the basis of the general composition of tort), against the background of the limited application options of the general composition of tort regarding self-driving vehicles one must inevitably ask if the respective preclusions are adequate for self-driving vehicles or they limit the liability of the direct possessor to an unreasonably large extent.[26]

Looking at the preclusions set out in clauses 1 to 5 of LOA § 1057 it can be concluded that these are unlikely to cause major problems in the context of self-driving vehicles in practice. As regards clauses 1 and 2, the injured person should generally be able to claim damages under contract law.[27] If damage was caused by

[24] *Force majeure* precluding the liability of a person controlling a source of a greater danger may be an extraordinary natural factor that takes the place of a risk emanating from the source of a greater danger and the impact of which could not and did not have to be taken into account by the person controlling the source of a greater danger or by the injured person (judgment of the Civil Chamber of the Supreme Court in case no 3-2-1-111-05, 21 November 2005).
[25] For further information see Taivo Liivak and Janno Lahe, *supra* note 8.
[26] The application of general tortious liability would not be a problem under German law. Under subsection 4 of § 1a of the German StVG § 1a, a person who switches on the fully automated driving function is considered the driver. The "driver" must also remain alert and prepared to take over the driving of the highly or fully automated vehicle at any moment (§ 1b). Based on such a provision it is easy to make the "driver" liable, but it is highly questionable if the provision takes into account the underlying concept of self-driving vehicles, i.e. that all the persons in the vehicle are merely passengers.
[27] It should be added that, in line with the general rule, contractual liability is, similarly to strict liability, also liability not dependent on fault. The debtor is discharged from liability where they breached an obligation due to *force majeure* (subsection 2 of LOA § 103).

a wilful act of the injured person or by force majeure (clause 3), the causal link between the manifestation of a risk characteristic of a vehicle and the damage suffered by the injured person is broken and the injured person is not entitled to damages (the same result would be reached also upon application of general tortious liability to the possessor of a conventional motor vehicle). If the injured person participates in operating the motor vehicle (clause 4), the person usually acts on a contractual basis (travelling in, for example, a bus or a taxi as a passenger does not qualify as participating in the operation of a motor vehicle). Thus, claims for damages under contract law are possible as well.

Probably the most problematic is the preclusion set out in clause 5, according to which LOA § 1057 does not apply where the injured person was carried without charge and outside the economic activities of the carrier. For instance, where the owner of a self-driving vehicle gives a friend a free ride outside of their economic activities and an accident harming the friend occurs, it is not possible to apply LOA § 1057 to the owner and fault-based liability would likely be precluded by the absence of fault on the part of the owner. In such a situation there may not need to be a contract between the owner and the friend. It is also possible that, by giving the friend a ride, the owner was benevolently interfering with the friend's affairs (*negotiorum gestio*). If *negotiorum gestio* is justified, the beneficiary can claim damages, but only if the *negotiorum gestor* was negligent (subsection 1 of LOA § 1022). Thus, in the end the friend may be unable to claim damages from the owner on any grounds.

One could argue that this is indeed a fair outcome, because the friend voluntarily accepted the risk. Furthermore, in any event the friend is entitled to bring a claim for damages against the manufacturer of the self-driving vehicle.

4. RISK OF OPERATING A SELF-DRIVING VEHICLE

In a situation where a traffic accident involving a self-driving vehicle has occurred, the question of the division of liability or damages can be raised.

Under German StVG § 17, the obligation of multiple keepers of motor vehicles to compensate for damage caused to a third party depends in their mutual relations on the circumstances of the accident, above all, on which party mainly caused the damage. Under subsection 2 of StVG § 17, the principle provided for in subsection 1 also applies upon division of the mutual liability of the keepers of the motor vehicles where damage has been caused to a keeper of a motor vehicle involved in the accident. The respective provisions also apply where mutual damage has been caused

by a motor vehicle and a trailer, a motor vehicle and an animal as well as a motor vehicle and a train (subsection 4 of StVG § 17).[28]

In Estonian law, there is no special provision that would regulate the division of liability in the case of mutual damage caused by two motor vehicles. The LOA proceeds from the understanding that persons who mutually caused damage with motor vehicles are liable for causing damage to one another (presumably in full), but the damages payable to each can be adjusted based on subsection 1 of LOA § 139, i.e. the damages can be reduced due to the part that the injured person played in the occurrence of the damage. [29] Subsection 1 of LOA § 139 states that where damage occurred in part due to circumstances arising from the injured person or as a result of a risk for which the injured person is liable, the damages are reduced to the extent that the circumstances or the risk contributed to the occurrence of the damage.

According to the case-law of the Estonian Supreme Court, the risk of operation of the vehicle and the behaviour of the driver must be taken into account upon reducing damages based on subsection 1 of LOA § 139.[30] Taking into account that the operational risk (*Betriebsgefahr*) is rooted in the idea that once a person engages in traffic with a motor vehicle (i.e. enters a dangerous situation), this mere fact alone is sufficient grounds for reducing the damages (to a certain extent).[31] Thereby the injured person need not have committed a violation of sorts.[32]

In the framework of operational risk, one can distinguish between general operational risk and special operational risk. Circumstances affecting general operational risk include, for example, the vehicle's mass, speed, roadworthiness and safety equipment. Special operational risk means the objective characteristics and dangerousness of a specific manoeuvre.[33] As noted above, the behaviour of the drivers (above all, the disregarding of the traffic rules) is, in addition to the operational risk, taken into account upon application of subsection 1 of LOA § 139.

[28] StVG § 17 is a special rule with regard to BGB § 254 which allows for reducing the damages as a general provision. See Franz Jürgen Säcker, Roland Rixecker, and Hartmut Oetker, *Münchener Kommentar zum Bürgerlichen Gesetzbuch. Band 2. Schuldrecht. Allgemeiner Teil. 6. Auflage* (München: Verlag C. H. Beck 2012), 530. BGB § 254 applies in events that are outside the scope of StVG § 17. For example, where the keeper of a motor vehicle and a pedestrian mutually cause damage.

[29] The Supreme Court laid the foundations for this understanding in its judgment in case no 3-2-1-75-07 dated 24 September 2007. Later, the approach has been repeated in multiple judgments (Supreme Court Civil Chamber judgments in cases no 3-2-1-76-09 (para 13), 3-2-1-161-10 (para 12), 3-2-1-29-11 (para p 13), 3-2-1-7-13 (paras 27–33), etc.

[30] Judgment of the Civil Chamber of the Supreme Court in case no 3-2-1-7-13.

[31] It need not be a collision of two motor vehicles. The reduction of the damages based on the operational risk has been considered justified also where the injured person drove a car into a pile of gravel in a road construction zone. The Supreme Court held that a risk characteristic of a motor vehicle could in such a situation manifest, for example, in such a way that the claimant was unable to stop the motor vehicle immediately at the moment when the claimant noticed the pile of gravel (Supreme Court Civil Chamber judgment in case 3-2-1-173-14, para 14).

[32] See Franz Jürgen Säcker, Roland Rixecker, and Hartmut Oetker, *supra* note 28, 528.

[33] Judgment of the Civil Chamber of the Supreme Court in case no 3-2-1-7-13, para 31.

Based on the operational risk and the behaviour of the drivers, the grounds of reduction of the damages of each party involved in the accident are identified in the light of subsection 1 of LOA § 139.[34] In German law, the so-called liability quotas are set in the light of these circumstances. For example, if one party to the accident was negligent but the other was not, the other party merely bears the operational risk, which is usually about 20–30%. Even though each case should be assessed individually, these quotas serve as a rough guide.[35] The liability quotas are set in such a way that the parties' shares must amount to 100%. Damage is compensated for based on liability quotas in such a manner that when, for instance, A's liability quota is 25% and B's liability quota is 75%, A must compensate B for 25% of A's damage, while B must compensate A for 75% of A's damage. As noted above, the division of liability in each individual case must be assessed separately. It may happen that, where two similar vehicles were moving at the same speed, the operational risk turns out to be equal.[36]

Regarding self-driving vehicles, the first question is how to assess the size of their operational risks. It is possible to build up a case in one or the other direction. On the one hand, it could be argued that the operational risk of self-driving vehicles should be higher than that of conventional vehicles, because there are merely driven by a computer program and a human essentially lacks the ability to "correct" for the mistakes of the computer program. On the other hand, it could be argued that the operational risk of a self-driving vehicle should be considered lower, because self-driving vehicles do not cause damage due to human errors and refrain from causing damage to the extent possible according to the laws of physics.

In the case of self-driving vehicles, it is not possible to take into account the driver's behaviour (i.e. whether the driver violated the traffic rules) upon reducing the damages. This seems to cause the main problem in the light of a fair division of damages.

The Estonian Supreme Court has held that where it becomes evident that both drivers violated the rules of safe road use established in the TA and their involvement in the traffic accident was, taking into account their behaviour and the operational risks emanating from the vehicles, more or less equal, the court has a ground under

[34] For further information on different groups of cases see Janno Lahe and Irene Kull, "Motor Vehicle Operational Risk and Awarding Damages in the Event of a Traffic Accident," *Journal of European Tort Law* 5 (1) (2014).
[35] See Franz Jürgen Säcker, Roland Rixecker, and Hartmut Oetker, *supra* note 28, 560-562. For an in-depth discussion of the practice of liability quotas see Christian Grüneberg, *Haftungsquoten bei Verkehrsunfällen. 10. Auflage* (München: Verlag C. H. Beck, 2007). This book systematises approx. 4,400 court decisions.
[36] Peter Hentschel, *Straßenverkehrsrecht. Beck'sche Kurzkommentare. Band 5. 37, neu bearbeitete Auflage* (München: Verlag C. H. Beck 2003), 225.

subsection 1 of LOA § 139 to reduce the compensation for material damage to be awarded to the injured person presumably by 50%.[37]

The Supreme Court has also taken the view that if the involvement of a person in a traffic accident was higher than that of another, it must be taken into account upon reducing the damages based on subsection 1 of LOA § 139. A possible violation of the TA by the other party can be assessed upon determining the size of the claimant's damages, because the significance of the claimant's own violation depends on it.[38]

In a situation where two self-driving vehicles have mutually caused damage, the violations of the persons in the vehicles cannot be taken into account. Thus, one solution would be, since the operational risk of the self-driving vehicles is presumably equal and the drivers' behaviour cannot be taken into account, the damages payable to each party should, regardless of the circumstances of the traffic accident, always be reduced by 50%. This does not seem to be a fair solution.

Instead, one could argue that also in the event of damage mutually caused by self-driving vehicles, an assessment of the circumstances of the traffic accident nevertheless remains inevitable upon deciding over the division of damages. This means that, instead of the driver's behaviour, it must be assessed whether the self-driving vehicle *followed* the traffic rules. If the accident can be traced back to a programming error in one of the self-driving vehicles as a result of which it failed to give way to another vehicle travelling on the priority road, a fair solution would be one where the owner of the vehicle that travelled on the priority road has all or most of their damage compensated. Thus, a solution worth considering one in which, in the context of reduction of damages, the adherence to the traffic rules by a self-driving vehicle can be assessed analogously to the behaviour of a human driver.

In a situation where a self-driving vehicle and a conventional vehicle cause mutual damage, two alternatives can also be considered upon division of the damages. One option would be, similarly to the aforementioned, to add to the self-driving vehicle an imaginary human driver and ask whether causing damage in the particular manner would have qualified as a violation of the traffic rules and how serious violation it would have been in comparison with the violation committed by the other party. For instance, if the self-driving one caused damage in a manner that, in the case of a conventional vehicle, would qualify as a serious mistake by a human driver (e.g. drives onto an intersection while the traffic lights prohibit it), the damages of the owner of the self-driving vehicle should be reduced to zero and the injured

[37] Judgment of the Civil Chamber of the Supreme Court in case no 3-2-1-64-15. In German case-law, liability is also divided 50-50 in the event of an equal operational risk and fault. For further information see Christian Grüneberg, *supra* note 35.
[38] Judgment of the Civil Chamber of the Supreme Court in case no 3-2-1-64-15, para 13.

person should be fully compensated for the damage suffered. If both vehicles "violated" the traffic rules, the impact and relevance of each violation regarding the occurrence of the accident should be assessed.

The alternative would be to deem the operational risk of self-driving vehicles to be considerably higher than that of conventional motor vehicles. However, finding a fair final solution in an individual case still calls for taking into account the circumstances of the accident.

In summary it can be noted that even though a fair division of liability upon damage caused by a self-driving vehicle calls for certain adjustments to the practice of application of LOA § 139, it is not an overwhelming tasks in developing case-law.

CONCLUSIONS

In the event of damage caused by motor vehicles, strict liability is the most adequate liability regime. A self-driving vehicle can also be deemed a motor vehicle for the purposes of LOA § 1057 or a source of a greater danger for the purposes of subsection 2 of LOA § 1056. Thus, strict liability can be applied also to damage caused by self-driving vehicles.

The person required to compensate the injured person for damage under LOA § 1057 largely depends on how self-driving vehicles will come to be used, e.g. will they be bought for personal use like conventional vehicles or will they be used by fleet operators for providing transport services? In the latter case, a service-consuming person cannot be considered the direct possessor of the self-driving vehicle within the meaning of LOA § 1057 or the person controlling the source of a greater danger within the meaning of subsection 1 of LOA § 1056.

At first glance, the preclusions provided for in clauses 1–5 of LOA § 1057 seem unreasonable for self-driving vehicles because the possibilities of holding the direct possessor of the vehicle liable under the fault-based general tortious liability regime are highly limited in the case of self-driving vehicles. Taking a closer look, it seems that these exceptions should not cause major problems in practice (with the exception of, perhaps, clause 5 of LOA § 1057). There would not be any analogous problem in German law because under StVG § 1b the driver of a self-driving vehicle is required to stay alert and prepared to take over the control of even a highly or fully automated vehicle.

A fair division of liability in the event of a traffic accident also calls for taking into account the circumstances of the accident even if it involves a self-driving vehicle. Although it would be far-fetched to speak of the "driver" and their faulty conduct in the case of a self-driving vehicle, one still needs to assess whether the

self-driving vehicle violated the traffic rules and the extent to which the violation affected the occurrence of the traffic accident.

It can be argued that the protection of the rights of the injured person is not considerably affected by whether the injured person has been damaged by a self-driving vehicle or a conventional vehicle. Strict liability can be applied in either case. Therefore, there is no reason to overhaul the Estonian LOA's strict liability provisions in preparation for the introduction of self-driving vehicles.

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