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DRONE UTILISATION AS A POSSIBLE ABNORMALLY HAZARDOUS OPERATION

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1. Introduction

These days the technological development rising and has a huge effect on the life of humankind that will be possibly more relevant in the future. The connection between the field of law and technological development can be a very interesting topic, especially how the law can respond to these phenomena. We believe that the legal system should be prepared for these changes and make a solution to the likely problems.

The aim of this paper to examine which rules can be applied for damages caused by drone operation for third parties. We are concentrating on the non-contractual liability because up to the present no national legal literature; no judicial decision had examined or assessed in full details the main question whether the drone operation could be considered as hazardous operation or what extent or in which circumstances. In this study, we would like to know more about this possibility.

2. Basics

First of all, it is important to define the term the drone. We can describe it as an aerial vehicle that can be operated automatically or remotely controlled. In Hungary, Act No. XCVIII of 1995 on Aviation does not refer to it as a drone, but as an unmanned aerial vehicle (hereinafter: UAV) as *"a civil aerial vehicle, which designed and operated without a man on board"*[1]. The most important regulations are, the above: the Regulation No. 2018/1139 on common rules in the field of civil aviation and establishing a European Union Aviation Safety Agency, and amending other regulations (hereinafter: Regulation No. 2018/1139) – it was the first document of the European Union, which described the UAVs –, the Commission Delegated Regulation No. 2019/945 on unmanned aircraft systems and on third-country operators of unmanned aircraft systems (hereinafter: Regulation No. 2019/945) and the Commission Implementing Regulation No. 2019/947 on the rules and procedures for the operation of unmanned aircraft (hereinafter: Regulation No. 2019/947). We have to note that the regulations have a huge significance because they must be applied to the Member States and these regulations cover all commercial and private drones regardless of

[1] Act No. XCVIII of 1995 on Aviation, Section 71, Point 35.

their weight. The regulation No. 2019/945 and the Regulation No. 2019/947 give two important definitions. One of them is the unmanned aircraft (so-called UA),[2] the other one is the unmanned aircraft system (so-called UAS).[3] People name these devices as a drone in everyday life after the buzzing bees, but the official designation follows the aviation terminology: it is also known as UAV (unmanned aerial vehicle), UAS (unmanned aircraft systems), RPV (remotely piloted vehicles), RPAS (remotely piloted aircraft systems).[4]

The attractiveness of these products stems from two reasons. Firstly, people can use it for several aims (versatility), secondly, they are easy to use without any specific knowledge (easy handling) or without special certificate or permission. We can separate the devices into three groups according to the purposes of exploitation, such as governmental[5], commercial and private drones.[6] The essence of the commercial drones that the owner of the machine provides service for financial or non-financial compensation, like in the field of entertainment, event management, agriculture, industry or in research and development.

Personal drones can be called as a hobby or recreational drones. These vehicles are smaller in size than the commercial ones, despite this fact they can be used on quite a wide range of possibilities, for example making photos and videos.[7] We also have to note that in this category of use the weight of the device mostly less than 250 grams.[8] The reason for their attractiveness derives from their small dimensions, and from the fact that they can be managed easily and safely.

3. Examination of hazardous operation

3.1. Defining the highly dangerous activity

Primarily, it is important to identify the conceptual meaning of hazardous operation. Act No. V of 2013, the Hungarian Civil Code (hereinafter: HCC) only describes the operation itself and says *"who pursues an activity that is considered*

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2 *"Unmanned aircraft means any aircraft operating or designed to operate autonomously or to be piloted remotely without a pilot on board."* Regulation No. 2019/945, Article 3(1): https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019R0945&from=EN (Date of download: 12/12/2019).

3 *"Unmanned aircraft system means an unmanned aircraft and the equipment to control it remotely."* Regulation No. 2019/945, Article 3(3). Regulation No. 2019/947, Article 2(1): https://eur-lex. europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019R0947&from=EN (Date of download: 12/12/2019).

4 Ibolya STEFÁN: A drónokkal kapcsolatos szabályok vizsgálata. *Miskolci Jogtudó*, 2017/1., 71, https://jogtudo.uni-miskolc.hu/files/821/MJ2017iss1art8Stefan.pdf (Date of download: 12/12/2019).

5 For the governmental use, namely, the applicability of the drones in the public administration, see among others: Balázs SZABÓ: *Technical and technological development of Hungarian administration in the first two decades of the 21th century*. Ph.d. Dissertation, pp. 144–161, University of Miskolc, 2020.

6 STEFÁN: ibid. 72.

7 STEFÁN: ibid. 73–74.

8 STEFÁN: ibid. 77.

highly dangerous shall be liable for any damage caused thereby"[9]. This liability rule is a general clause and it is very flexible for this reason. Moreover, as the old Hungarian Civil Code (Act No. IV of 1959) neither contained any definition of hazardous or highly dangerous activity, nor listed any types of activity deemed as highly dangerous, it was the judicial practice which elaborated some elements of the definition. As a result of this phenomenon, a great number of hazardous operations have identified in the last century parallel with technological development.[10] *"Under the judicial practice, in order to assess the highly dangerous nature of an activity, one should take into account the characteristic features of the device applied in the course of activity and the potential consequences of the events triggered by this activity. The issue should be assessed on a case-by-case basis whether a slight abnormality occurring under normal conditions of use can cause damage in a disproportionately wide range or disproportionately large amount." (BDT 2010.2358.)*[11]

This definition of the judicial practice can be compared with results of comparative law about the phenomenon of dangerousness: Koziol states the following: *"It has already been mentioned above that three criteria are relevant in assessing dangerousness: the probability that damage will occur, the extent of the possible damage and the controllability of the risk. These three criteria may have different influences on the outcome; however, they must always be examined together: if there is a high risk of injury then liability based on dangerousness may even be justified if the possible damage is relatively minor; in this connection, the damage caused by motor vehicles comes to mind. On the other hand, liability based on dangerousness is also appropriate if the probability of damage is minor but the damage that could occur in the event may be massive; an example in this respect would be nuclear power plants."*[12]

3.2. Dangerousness in drone operation

In this section, we should examine how the definition of hazardous operation can be applied to the drones. These years we read news about emergencies, accidents, and damages that were caused by UAVs. These tools can be very dangerous. For example, we present an accident and claims for damages stemmed from that in the following. The RPV caused a helicopter accident. A private helicopter teacher was tutoring practical skills to his student, while an unknown drone entered the airspace used by

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9 HCC: Section 6:535 (1).

10 Tamás LÁBADY: Felelősség fokozott veszéllyel járó tevékenységért. In: Lajos VÉKÁS–Péter GÁRDOS (eds.): *Kommentár a Polgári Törvénykönyvhöz*. 2. kötet. Wolters Kluwer Kft., Budapest, 2014, pp. 2268–2269.

11 Réka PUSZTAHELYI: Liability for intelligent robots from the viewpoint of the strict liability rule of the Hungarian Civil Code. *Acta Universitatis Sapientiae, Legal Studies*, 2019, EMTE-Sapientia (forthcoming).

12 Helmut KOZIOL: Basic Questions of Tort Law from a Germanic Perspective. Wien, Jan Sramek Verlag, 2012, p. 235.

the helicopter. The operator of the helicopter tried to avoid the collision; unfortunately, he lost control over the aerial vehicle and crashed the ground. Luckily the passengers did not suffer any harm. We also have to mention a study made by the Federal Aviation Agency in the USA. In that document, the scientists published the results of their research, where the aim was the examination of air collision between drones and commercial planes, contrary to birds. In the simulation, the tools weighed the same as regular birds – between 1.2 kg and 3.6 kg – and crushed into the different parts of the plane. The damages can be separated into for levels:

1. Level: the damage is minimal; there are some small deformations.
2. Level: significant, visible damage can be seen on the external surface and a smaller internal deformation, but the cover does not break.
3. Level: The cover of the plane is broken and at least one item gets into the internal structure from that UAV, which had a collision with the plane.
4. Level: The entire UAV gets into the plane and the system fails.

As a result, the researchers proved that the damage of a plane and bird collision is a 2. Level damage, meanwhile, the damages caused by drones are at least 3. and 4. level damages. They stated that among the same characteristics, the drones can make a larger amount of damages than birds. Furthermore, the tools can cause fire, if their battery penetrates into the structure.[13]

From the above-mentioned information, we can see that the unmanned aerial vehicles during their operation are capable of causing a huge amount of damage, moreover to endanger individuals of aircraft and people on the ground. According to this, we can state that the operation of the drone can be described as a highly dangerous activity. However, it is important to note, this state is not true in connection with the above mentioned little drones – weighed less than 250 grams.

3.3. The notion of the operator

In this chapter, we are examining the position of the operator focusing on the regulations of the European Union and the Hungarian Civil Code. The Hungarian Civil Code gives a short, and – in our opinion – not an exclusive definition of the person who is liable for damages caused by the hazardous operation. Section 6:536 (1) says, *"the person on whose behalf the hazardous operation is carried out shall be recognized as the pursuer of a highly dangerous activity"*. If we focus only on that person who has an interest in the operation in connection with the proof of the liability, this method will give us a fault result.

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[13] Gerardo OLIVARES–Thomas LACY–Luis GOMEZ–Jaime ESPINOSA DE LOS MONTEROS–J. Russel BALDRIDGE–Chandresh ZINZUWADIA–Tom ALDAG–Kalyan Raj KOTA–Trent RICKS–Nimesh JAYAKODY: UAS Airborne Collision Severity Evaluation: Executive Summary – Structural Evaluation. Federal Aviation Administration, Washington, 2017, pp. 9–23. https://www.researchgate.net/publication/328942360_Volume_I_UAS_Airborne_Collision_Severity_Evaluation_Summary_of_Structural_Evaluation (Date of download: 12/12/2019).

According to the judicial practice, the operator is the person who can lower or decline the risk of the damages, control and keep the hazardous operation, has a right to the disposal of the dangerous activity or gets any compensation from the operation.[14] The above-mentioned information is not enough for describing the exact definition because it gives the possibility to identify people as the keeper of the hazardous operation, who does the operation occasionally or temporarily. A judgement gave the missing component, says, *"keeping the highly dangerous activity means frequent, recurring and permanent activity, which should be examined from the characteristics of each case". (PK 40.)*

We also have to focus on the regulations of the European Union and Hungary, because it must be applied to every Member State, as we mentioned above. Regulation No. 2019/945 and Regulation No. 2019/947 contain the same definition for the UAS operator as *"any legal or natural person operating or intending to operate one or more UAS"*[15].

The Regulation No. 2018/1139 and the Regulation No. 2019/945 have several dispositions on unmanned aerial vehicles, such as the concept of the remote pilot *"means a natural person responsible for safely conducting the flight of a UA by operating its flight controls, either manually or, when the UA flies automatically, by monitoring its course and remaining able to intervene and change its course at any time"*[16].

According to this, it can conclude it, which in the EU legislation, the operator and the remote pilot may be up to two separate persons. Problems may be rising if this rule is linked to the category of the operator of the Hungarian hazardous operation, and we want to determine who is responsible for the damage caused by the drone to a third party. However, the solution might be the rule of general responsibility. As a result of the separation of the operator and the person who actually cause damage, the former shall be subject to the regulations of the hazardous operation, while the latter, shall be responsible for the caused damage of the general provisions of liability.[17]

3.4. Some issues relating to defences against strict liability

The nature of the liability rule for highly dangerous activity is strict. It is not a fault-based, but a risk-based liability rule,[18] where it is more difficult to be exempt-

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[14] Ádám FUGLINSZKY: Kártérítési jog. HVG-Orac Lap- és Könyvkiadó Kft., Budapest, 2015, pp. 381–382.

[15] Regulation No. 2019/945, Article 3(4); Regulation No. 2019/947, Article 2(2).

[16] Regulation No. 2018/1139, Article 3(31). https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018R1139&from=EN (Date of download: 12/12/2019).
Regulation No. 2019/945, Article 3(27).

[17] Barbara BÚZÁS: Veszélyes üzemi felelősség. *Miskolci Jogtudó*, 2017/1., p. 3. https://jogtudo.uni-miskolc.hu/files/814/MJ2017iss1art1Buzas.pdf (Date of download: 12/12/2019).

[18] See *"Finally, when the risk of damages is linked to dangerous activities, some jurisdictions may attribute liability to the person that carries out the activity (e.g. the operator of a nuclear power plant or of an aircraft or the driver of a car) or is ultimately responsible for the dangerous activi-*

ed from the liability for damages. The underlying principle for this regulation based on the fact that an inherent and increased risk stems from the activity even if the operator acts in the most cautious and careful way, and take all the appropriate measure to avoid harm in advance. The second subsection of the 6:535 establishes the possibility of defence for the tortfeasor, providing that he could prove successfully that the damage was caused by an external (it falls beyond the scope of activity) and unavoidable event (it was neither foreseeable or predictable nor avoidable with preventive safety measures up to the extent of economic rationality).

The point of the unavoidable event is that the tortfeasor was unable to avoid it. This does not mean that for some reason he could not avoid it, but it means he did not have the opportunity to do so, he was unable to do it according to the state of the science. We also have to mention when examining the avoidability of the event, the time when the damage incurred will be irrelevant instead of it the whole process will be relevant, which resulted in damage. According to this, the damage is not considered to be unavoidable if it was excepted from the circumstances or if it could have been avoided earlier by making the right decision.[19]

The damaging event is external if it falls beyond the scope of the activity. The scope is interpreted widely. Technical failure is considered to be internal, including defects of the material or component and changes in the health condition or capabilities of the operator such as sickness or some kind of disease. Because of the requirement that the two conditions should meet, it is quite impossible for the operator to be exempted from the liability.[20] However, the following cases are examples for exoneration such as force majeure, the contributory negligence of the injured party and other external circumstances, events.[21]

Our opinion is that the defence is even more difficult in the case of unmanned aerial vehicles because they are massively developed devices. Even the smallest devices are equipped with different sensors. The point of it, they are used to inform the vehicle, and, on the other hand, they try to avoid, reduce the possibility of collisions during flight or landing. Besides, damage can be prevented by both external and internal components. Accessories developed and marketed by some drone manufacturers are external devices, their role to minimize the risk of damage, such as propeller protectors[22] and parachutes.[23] On the other hand, internal mechanisms

ty to happen (e.g. the owner of a vehicle). The rationale typically is that this person has created a risk, which materialises in a damage and at the same time also derives an economic benefit from this activity."

SWD(2018) 137 final, Commission Staff Working Document – Liability for emerging digital technologies Commission, 9.

19 FUGLINSZKY: ibid. 372.

20 FUGLINSZKY: ibid. 376.

21 Edit UJVÁRINÉ ANTAL: *Felelősségtan*. Novotni Alapítvány a Magánjog Fejlesztéséért, Miskolc, 2014, p. 129.

22 DJI officially released the Phantom Prop Guard: https://www.dji.com/hu/newsroom/news/dji-officially-released-the-phantom-prop-guard (Date of download: 12/12/2019).

23 DJI Dropsafe: https://www.dji.com/dropsafe?site=brandsite&from=insite_search (Date of download: 12/12/2019).

are programmed into the software of the machine, like the return-to-home function. It means the drone automatically returns to its starting point when the battery is low or signal problems occur, instead of unexpectedly stopping and crashing into something or someone. [24] As stated above the chances of exemption are very low. However, it is possible in the following conditions:

1) The notion of force majeure refers to events beyond human control, such as natural disasters, lightning, extreme storms, and war.[25] When flying drones, the operator must follow operating rules. It is the main rule that operation can be performed during appropriate visual and weather conditions. Based on this statement, it is difficult to imagine the possibility of liability exemption unless there is an exceptional weather anomaly during operation which the pilot could not expect based on his prior knowledge. For example, if the pilot made a flight plan and monitored the weather in the area but a solar flare causes disorder in the device and flies onto a high-value vehicle, he could prove that the event was the external cause of damage and it fell beyond his control, that is unavoidable.
2) The behaviour of the injured person or third persons and other external circumstances rarely have the consequence of exempting him from liability because the drone operators must be prepared for almost every possibility. Our viewpoint is that the exemption can be possible if the third party is connected to the tool while operating the vehicle and infects the device with a newly developed virus, and as a result, it causes a serious technical defect, crashes and causes damage to someone.

3.5. The concurrence of hazardous operations and other regulations

We should take a closer look at other rules like concurrence of hazardous operations and the period of limitation. The hazardous operations may cause damage to each other. In these cases, the rules of Section 6:539 shall be used *"where damage is caused by one hazardous operation to another, the operators shall be liable to provide compensation as commensurate according to attributability"*[26]. If none of them is liable, *"compensation shall be provided by the party whose highly dangerous activity is responsible for the malfunction that contributed to causing the damage"*[27]. After all, if both of them or none of them are responsible for the malfunction scope of hazardous activities, each person has to bear his damage.[28] This phenomenon looks possible according to aerial vehicles; it can happen during operation, such as the collision of two drones.

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[24] *How to use DJI's Return to Home (RTH) Safely*. https://store.dji.com/guides/how-to-use-the-djis-return-to-home/ (Date of download: 12/12/2019).
[25] UJVÁRINÉ: ibid. 130.
[26] Section 6:539 (1) of HCC.
[27] Section 6:539 (2) of HCC.
[28] Section 6:539 (3) of HCC.

Lastly, we also have to mention the limitation period. The three years of rules[29] can be applied to drones without any problem. We have to note that the injured party can enforce its claim, even if the three years passed – because of the regular, five-year limitation – but only according to the general rule of extra-contractual liability.[30]

4. Problems with the hazardous operation and their solutions

4.1. Drone operation as a highly dangerous activity

We can state on the above mentioned; it would be useful to apply the rules of hazardous operation on damages caused by drone operation for the third party. However, we also have to mention that these rules are not perfect in relation to drones weighed below 250 grams. If we compare these small UAVs to much bigger ones, like agriculture drones and we apply to both the rules of highly dangerous activities, we can see the difference between them. As a result, it would not be equitable to apply the stricter rules for the smaller tools.

In our view, the prevailing of the principles of equity and justice is very important. As a result of our research, we believe there are two solutions. Firstly, applying the rules of hazardous operation for drone operation, except the smaller drones, weighed less than 250 grams. Secondly, judicial practice or legislators revise the actual rules of liability or establish a new one.

4.2. Problems with the operator

We can separate the operator and the actual pilot of the vehicle. In some cases, it is hard to tell which one will be liable for the damage because both qualities quite similar to each other. We believe that the real, actual influence should be appreciated more. The basis of this statement comes from French civil law. The point of the strict liability is the keeper of the thing will be liable for the caused damage. For example, in a case, the French Court of Cassation said that a three years old child was the keeper of a stick – as a thing – which caused harm to one of his friends –, because he influenced the stick.[31]

5. Summary

In this study, we wanted to answer the question, who will be liable for the third party damages caused by drone operation. Finding the right to answer this question is very difficult especially because this is a new and unique technology. We have to focus on the regulation of the European Union while making the solution for the

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[29] Section 6:538 of HCC.

[30] Péter HAVASI: Felelősség fokozott veszéllyel járó tevékenységért. In: Ferenc PETRIK (ed.): Polgári jog – Kommentár a gyakorlat számára (a 2013. évi V. törvény, az új Ptk. kommentárja) Vol. IV. HVG-Orac Lap-és Könyvkiadó Kft., Budapest, 2016, pp. 990–991. (BH 1996.256.)

[31] Cees VAN DAM: European Tort Law. Second Edition. Oxford University Press, Oxford, 2013, p. 64.

above – mentioned problems. We believe that coherent will be only on the field of public law, and the likelihood is very low of a coherent regulation in the field of civil law. Technological development themed researches are very important because the results can be a good starting point in the future.