UDK 341.41:623.4]:004.8
Original scientific paper

RETHINKING COMMAND RESPONSIBILITY IN THE CONTEXT OF EMERGING AI WEAPONS*

Igor Vuletić, PhD, Associate Professor
Josip Juraj Strossmayer University of Osijek, Faculty of Law Osijek
Stjepana Radića 13, 31 000 Osijek, Croatia
ivuletic@pravos.hr

ABSTRACT

This paper addresses the issue of command liability for severe criminal offenses committed by means of autonomous and semi-autonomous weapons. Research has shown that the leading military forces around the world are intensively working on designing autonomous weapons, which will provide them an enormous tactical ad logistical advantage in warfare. As the national and international law concept of command responsibility to date has been based on the idea of humans selecting and ordering the destruction of targets, the author raises the question of whether this has also created a set of legal norms that could adequately regulate such situations in the context of new warfare techniques. The first section of the paper briefly outlines the direction of the development of autonomous weapons. The second section analyzes the provisions on command responsibility of the Rome Statute and the Statute of the ad hoc tribunals for Yugoslavia and Rwanda. The national legislation of some countries and the significant jurisprudence in this field is also analyzed and projected into the context of semi-autonomous and autonomous warfare. A special emphasis is placed on the issue of unconscious negligence. The objective of the paper is to indicate the legal gaps and to propose guidelines for future development.

Keywords: *autonomous – weapons – commander – liability – punishment – negligence- causality - targeting*

1. INTRODUCTION

The development of artificial intelligence (AI) is one of the trends, which is likely to revolutionize various sectors. Artificial intelligence has permeated sectors such as medicine and the vehicle industry. However, this trend is particularly progres-

* This paper is co-funded by the Erasmus+ Programme of the European Union. The paper reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

sive in the military industry, with many global military super powers defining the development of autonomous weapons as their strategic objective for the near future. This type of weapons is believed to have numerous advantages over the traditional types of weapons, including the reduction of human casualties for the users, higher level of precision and effectiveness as well as lower costs, etc.[1]

On the other hand, an increased level of automatization in this sector could also have potentially harmful effects and create legal dilemmas and/or loopholes, which cannot be adequately addressed within the existing legal framework.[2] For instance, would an automated system be able to distinguish between a terrorist and an ordinary hunter carrying a gun on his shoulder? In addition, would a commander be responsible in this scenario if the system selected and destroyed the wrong target? Such scenarios are not impossible, as some relatively recent cases demonstrate; e.g.in 1988 the American radar system „*Aegis*", whose purpose was protecting the battle ships from aerial attacks, confused an Iranian civilian airplane Iran Air 665 with a military aircraft and launched an antiaircraft rocket, causing the death of all 290 passengers and crew members.[3]

This paper seeks to contribute to the already existing discussion from two different angles. Firstly, we will assess the current level of automatization of the most highly developed military systems, as well as the plans for their future development. In this context particular attention will be devoted to the issues of both the existing and desired level of autonomy of the weapons in the detection and selection of targets, their methods of operation and the ability of humans to communicate with the weapons and order a last-minute recall. After establishing the measure in which the autonomy of the weapons also implies its genuine independent decision-making, we will then bring the discussion into the context of command liability in international criminal law. Special consideration will be given to the issues of causality and culpability (the foreseeability of the consequence), taking into account different interpretations, which exist on this matter in civil law and common law traditions.

The aim of this paper is to determine whether the gradual introduction of autonomous warfare into military operations also demands the modification (or fundamental alteration) of the existing concept of command responsibility.

---

1 Mauri, D., *Autonomous Weapons Systems and the Protection of Human Persons – An International Law Analysis*, Edward Elgar Publishing, Cheltenham – Northampton, 2022, p. 7.

2 For a discussion from the human rights perspective see *ibid*. See also e.g. Grut, C., *The challenge of autonomous lethal robotics to international humanitarian law*, Journal of Conflict and Security Law, Vol. 18, No. 1, 2013, pp. 5–23.

3 See more Simple Flying, *34 Years Ago Today: The Shootdown Of Iran Air Flight 655*, 2022, [https://simpleflying.com/iran-air-flight-655-1988-shootdown-anniversary/], Accessed 27 July 2022.

2. AUTONOMOUS WEAPONS: WHERE DO WE STAND?

In order to be able to competently discuss the issue of command responsibility for the acts of autonomous weapons, it is important first to clearly define the concept of autonomous weapons, although there is no consensus in this regard.[4] According to the British Ministry of Defense, in order for a weapon to be autonomous, it must be „*capable of understanding higher level intent and direction and take appropriate action to bring about the desired state*".[5] This definition, however, raises a considerably high requirement which is currently far from realization, and such autonomous weapons are conceivable only in the far future. Therefore, the following analysis will be based on a more pragmatic definition provided by the US Department of Defense, stating that any weapon with the capacity, when activated, independently „*select and engage targets without further human intervention*".[6] The latter definition covers weapon systems that are already developed today and are in possession of the most developed global military forces. Autonomous weapons should be distinguished from automatic weapons which are programmed in a way to follow a logical chain of rules without making independent decisions on the selection of the targets and the course of action.[7]

The first known instance of the use of autonomous weapons happened in the conflict between Azerbaijan and Armenia in Nagorno-Karabakh in 2016. The Azerbaijan military gained a significant tactical advantage by using advanced Israeli autonomous weapon IAI Harop loitering munition, also known as the „kamikaze drones."[8] This is a special type of rocket which, once launched, can hover in the air for hours and „lurk" over enemy targets before striking and destroying them, similar to the Japanese kamikazes in World War II.[9]

For the classification of autonomous weapon systems in this paper, we will adopt the one provided by the Stockholm Peace Research Institute (SIPRI) in line with the definition of the US Department of Defense. According to this classification, autonomous weapons can be divided into the five categories described in the following sections.[10]

---

4 Mauri, *op. cit,* note 1, p. 24.

5 UK Ministry of Defence, *Joint Doctrine Publication 0-30.2., Unmaned Aircraft Systems*, 2017, p. 13, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/673940/doctrine_uk_uas_jdp_0_30_2.pdf], Accessed 28 July 2022.

6 US Department of Defense, *Directive No. 3000.09*, 2017, pp. 13-14, [https://www.esd.whs.mil/portals/54/documents/dd/issuances/dodd/300009p.pdf], Accessed 28 July 2022.

7 *Supra* note 5.

8 Postma, J., *Drones over Nagorno-Karabakh,* Atlantisch Perspectief , Vol. 45, No. 2, 2021, pp. 15 – 20.

9 See HAROP, *Loitering Munition System*, [https://www.iai.co.il/p/harop], Accessed 28 July 2022.

10 Boulanin, V.; Verbruggen, M., *Mapping the Development of Autonomy in Weapon Systems*, SIPRI, Solna, 2017, pp. 36 - 54,.

A) *Air defense systems*

These systems operate by discovering potential aerial threats through a radar, assessing the danger risk and independently determining whether to attack. The final decision on the course of action, thus, falls on the system. The human behind the system decides on its activation, oversees its operation and has the power to turn it off at any point.[11] There are multiple types of such air defense systems. Examples include the Dutch *GoalKeeper* and the US *Phalanax*, which are usually mounted on battle ships, or the German *MANTIS*, which serves for the protection of land army bases. It should be noted that such systems have been developed since World War II and that they are very sophisticated and effective nowadays.[12] In the past, air defense systems have cause numerous civil casualties, as in the case of the US *Aegis* system, which brought down an Iranian civilian airplane due to a wrong assessment, causing the death of 290 passengers.[13]

B) *Active protection systems*

The role of actuve protection systems is to protect armored vehicles from rocket attacks. The system is programmed to independently recognize and intercept certain projectiles. Examples include the Swedish- South African *LEDS-150* system, or the Israeli *Trophy.* These systems work under the same principle as the previously described air defense systems, which means they use radars for the detection of projectiles and a specially designed operational software. Such systems have been developed since the 1970s, and there are 17 registered autonomous weapons of this type to date.[14]

C) *Robotic sentry weapons*

Robotic sentry weapons are gun turrets which can independently detect and follow a target, and also shoot when needed. They can be used mounted on a vehicle and they can shoot from the ground when necessary. Unlike the previous two systems, they have been developed since the early 2000s, which is why there are only three known types. At the operational level, considering their development stage, they are mostly used for the surveillance of enemy movement.[15]

---

11 *Ibid.*, pp. 36 – 37.

12 *Ibid.,* p. 37.

13 *Supra* note 3.

14 Boulanin; Verbruggen*, op. cit.,* note 10, p. 41.

15 *Ibid.,* pp. 44 – 47.

D) *Guided munitions*

Guided munitions (also known as precision-guided munitions and smart bombs) do not fully satisfy the autonomy standards according to the US Department of Defense definition, because humans select their targets.[16] They are, nevertheless, included in this classification because of their ability to independently correct the initial targeting. Their autonomy, thus, relates only to the phase of the course of the projectile towards the target, after the target has been determined. This is why they were initially excluded from the SIPRI classification, but they were subsequently added because they provide an insight into the development of the autonomous targeting technology.[17]

E) *Loitering munitions*

Finally, loitering munitions, which have already been mentioned earlier in the context of the Nagorno-Karabakh conflict are a type of autonomous weapon with the capacity to fly over an area for a particular time and to „lurk" over the target before descending towards it in a manner comparable to the Japanese kamikaze from World War II. The only role of the humans in in this sense is to launch the projectile which then proceeds to operate fully autonomously. It is important to note that they are not assigned a concrete target in advance (it is chosen by them independently), but only the flyover area.[18] Here, the use of the drones in the war in Ukraine could also be mentioned as an example of such technology.[19]

The previous elaborations lead to the conclusion that the advent of autonomous weapons in the military industry is becoming more intensive. Because of the tactical advantages provided by the autonomous systems in combat, the leading global military forces are broadly accepting this type of weapons, regardless of the UN initiative to reduce or even eliminate the use of this type of weaponry.[20] The available reports do not allow a precise conclusion on the level of influence and control of the person behind the system. Namely, exact information about each of the existing systems, as well as those currently developed are treated as military

---

16 For more in this context see Amoroso, D., *Autonomous Weapons Systems and International Law. A Study on Human-Machine Interactions in Ethically and Legally Sensitive Domains*, Nomos, Napoli, 2020, p. 19.

17 Boulanin; Verbruggen*, op. cit.,* note 10, p. 47.

18 *Ibid.,* p. 50.

19 The Messenger, *The Ukraine War in data: Winning the drone war*, [https://www.grid.news/story/global/2023/01/05/the-ukraine-war-in-data-winning-the-drone-war/], Accessed 13 February 2023.

20 Gill, A. S., *The Role of the United Nations in Addressing Emerging Technologies in the Area of Lethal Autonomous Weapons,* UN Chronicle, Vol. 55, No. 4., 2019, pp. 15 – 17.

secrets and they are not publicly available. Experts in this area agree that human involvement is not always a guarantee of safe operations. To the contrary, it can present an additional danger if the operating person is not properly trained, or if the information input into the system is too complicated or insufficiently clear.[21] In this sense, literature indicates the difficulties in the determination of liability for severe offenses and violations of international humanitarian law committed by autonomous weapons.[22]

This issue can be observed primarily from the present perspective. Namely, although the management of military operations is still primarily a human task, there are at least thirty military forces around the world that function with significant reliance on so-called supervised autonomous weapons, which means that the system is in charge of targeting (search, identification, tracking and prioritization of targets), while the humans in the background make the final decision makes the final decision on the basis of such information.[23] These systems, also known as Automated Target Recognition (ATR), function under the principle of the so-called pattern recognition, which consists of the identification of military targets based on so-called target signatures, which are previously set by persons in the background.[24] If this mode of operations leads to the killing of civilians or the destruction of civilian targets, it opens complex issues of criminal law related to the predictability of the operations of the supervised autonomous system, or the so-called „many hands" problem[25] and the insufficient basis for an adequate level of liability. Literature warns of potential issue with the capacity of ATR-based system to accurately and precisely distinguish targets in accordance with the rules of international humanitarian law. This brings to light the inadequate level of field testing of the system as well as its over-fitting, and inability to program in light of the standards of international humanitarian law (since legal standards require human interpretation).[26]

On the other hand, this legal situation can also be observed from the prism of the (near) future, when it is likely that fully autonomous weapon systems will take the

---

21 *Ibid.,* p. 40.

22 United Nations Institute for Disarmament Research (UNIDIR), *Safety, Unintentional Risk and Accidents in the Weaponization of Increasingly Autonomous Technologies*, Geneva, 2016, p. 16, [https://unidir.org/publication/safety-unintentional-risk-and-accidents-weaponization-increasingly-autonomous], Accessed 28 July 2022.

23 Scharre, P., *Centaur Warfighting: The False Choice of Humans vs. Automation,* Temple International and Comparative Law Journal, Vol. 30, No. 1, 2016, p. 154.

24 Boulanin; Verbruggen, *op. cit.,* note 10, p. 25.

25 *Ibid.*, pp. 127 – 131.

26 *Ibid*., p. 25.

key role in the operational functioning on the battle field, and thereby also in key decision-making.[27] The related legal issues will become even more complicated since it will be much more difficult to construe legal liability of persons behind the weapon system. In addition, the insufficiently developed concept of criminal liability of legal entities at the international level will become even more complicated.

In the following sections we will turn to the criminal law dimension of the issue and we will address the question of whether the existing framework of command responsibility (at the national and supranational levels) is sufficient to encompass the potential situations of command responsibility if an autonomous system establishes the characteristics of an international criminal offense.[28]

3. SUPERIOR LIABILITY FOR AUTONOMOUS WEAPONS: RETHINKING THE SCOPE AND THE LIMITS

Command responsibility is one of the key institutes of international criminal law whose normative origins lay in the Hague Conventions. This concept was first applied during Leipzig process after World War I and it was affirmed in the trials for War World II crimes and the practice of the ad hoc courts for former Yugoslavia and Rwanda.[29] A turning point in the development of the concept of command responsibility was the judgment against the Japanese general Tomoyukij Yamashita for the crimes of his troops on the Philipines during World War II. This judgment established the legal standard for the liability of commanders for the crimes of their subordinates evennif they did not order such acts, but failed to undertake measure to prevent them.[30] Ever since then, and to this day, a significant body of case law has been built both by the international criminal tribunals, as well as the national courts of the countries in which war crime proceedings have been, or still are conducted.[31] A wealth of literature has also been dedicated to this issue. Nevertheless, it seems that the concept of command responsibility is still in its

---

27 See e.g. Matthias, A., *The Responsibility Gap: Ascribing Responsibility for the Actions of Learning Automata,* Ethics and Information Technology, Vol. 6, No. 3, 2004, pp. 175 - 183.

28 In literature, there is a lack of consensus on the definition and list of international crimes. In this paper, we are adopting *Bassiouni`s* definition of international crimes. See Bassiouni, M. C., *Introduction to International Criminal Law*, Second Revised Edition, Brill-Nijhof, Leiden, 2014, pp. 138.

29 Ching, A. B., *Evolution of the Command Responsibility Doctrine in Light of the Celebici Decision of the International Criminal Tribunal for the Former Yugoslavia,* North Carolina Journal of International Law, Vol. 25, No. 1, 1999, pp. 169 – 176. See also Martinez, J. S., *Understanding Mens Rea in Command Responsibility*, Journal of International Criminal Justice, Vol. 5, No. 3, 2007, pp. 647 – 660.

30 Ching*, op. cit.,* note 29*,* p. 181.

31 For example, in Croatian jurisprudence command liability is based on common principle of criminal responsibility for inaction. *See* e.g. Supreme Court of the Republic of Croatia*, Case No. Kž-rz 22/2018*.

development stage and that with each new case the courts face challenges which were not previously addressed. For example, *Martinez* rightfully warns that, even after a 50-year evolution of the doctrine of command responsibility, the issue of the scope of *mens rea* remains unclear.[32] On the other hand, *Bonafé* emphasises the issues related to the relatively small number of convictions based on command responsibility for typical military operations.[33]

The statutes of ad hoc tribunals, as well as the Rome Statute accept this standard but with the addition that he commander had acted with a certain type of *mens rea*, which means they knew or had reason to know of the acts of their subordinates. [34] The Rome Statute provides a much narrower liability of a civil commander than that of a military commander because the latter is also liable for unconscious negligence[35] (*should have known*), while civil commanders must be aware of all the circumstances and willfully disregard their duties.[36] It is worth noting that some national systems provide a much more lenient punishment for the negligent form of command responsibility, based on the essential difference between willful and negligent criminal offenses. Thus, such legal systems treat the negligent form as a special (less severe) criminal offense compared to the willful form of command responsibility. There are examples of such provisions in German and Croatian criminal law.[37] This regulatory regime is based on the principles of the criminal law dogmatic in continental Europe and it significantly differs from the approach in international criminal law, so it was often subjected to criticism.[38] We will not engage in a discussion of the merits of such a distinction because this would be outside of the scope of this paper.

From the practice of international and national courts to date has revealed that, in order for the commander to be liable under the established standards, several objective preconditions have to be met cumulatively: 1. The perpetrators of the specific criminal offense must be directly subordinated to the commander; 2. The commander must have an effective (real) ability to control ir subordinates; 3.

---

32 Martinez, *op. cit.,* note 29, p. 638.

33 Bonafé, B. I., *Finding a Proper Role for Command Responsibility*, Journal of International Criminal Justice, Vol. 5, No. 3, 2007, pp. 599 – 618.

34 See Rome Statute, Article 28; ICTY Statute, Article 7; ICTR Statute, Article 6.

35 Negligence as a form of guilt was sometimes denided in case law prior to the Rome Statute. See e.g. *Prosecutor vs. Bagilishema,* Appeals Chamber Judgement (ICTR), Case No. ICTR – 95 – 1A-A, 3 July 2002, para. 35.

36 Rome Statute, Article 28 (a) (i).

37 See German Völkerstrafgesetzbuch, Article 4; Croatian Criminal Code, Article 96.

38 As an example of criticism, see European Parliament, *European Parliament Resolution of 16 February 2011 on the 2010 progress report on Croatia*, para. 15, [https://www.europarl.europa.eu/doceo/document/TA-7-2011-0059_EN.pdf], Accessed 1 August 2022.

There must be a causal link between the criminal offense of the subordinates and the failure of the commander to exercise their effective control; 4. the commander must fail to undertake preventive measures that are necessary and could be reasonable expected in the specific situation. If the criminal offense was yet to be committed, the relevant measures would be of a preventive nature and otherwise the measures would be aimed at the processing and sanctioning the perpetrators.[39]

With regards to the subjective relationship with the offense (*mens rea*), a negligent commander should be familiar with the fact that their subordinates are preparing to commit an offense. This awareness of the facts creates certain controversies in theory and practice and it is difficult to prove at times. It can be stated in principle that negligence exists when the perpetrator is unaware of the facts underlying the criminal offense, but could or should be aware of them, under the standard of due care expected from them. [40] Thus, negligence is a violation of the duty of due care, with the cumulative violation of objective due care (that expected from any average person) and subjective care (which is expected from a particular perpetrator).[41]

The determination of such *mens rea* for command responsibility has proven to be very difficult in practice. Firstly, there are significant differences in the understanding of negligence in civil law and common law jurisdictions. In some common law countries, there are different interpretations of the duty of care standard. For example, some common law countries distinguish ordinary, gross and criminal negligence, while others do not.[42] On the other hand, civil law systems use a completely different terminology and they distinguish *dolus* (intent) from *culpa* (negligence), both of which branch out into sub-categories. The unharmonized terminology related to the liability is probably most pronounced in relation to *dolus eventualis* because this term can be subsumed under both recklessness and intent.[43] This is why there have already been attempts in literature to find a harmonized categorization of the types of liability, which would be applicable in all systems.[44] The analysis of certain cases related to command responsibility before national courts shows how liability for negligence can be excluded and the inter-

---

39 Satzger, H., *International and European Criminal Law,* C. H. Beck – Hart – Nomos, München – Oxford, 2012., p. 242.

40 See e.g. American Law Institute, Model Penal Code (1962), at 2.02(2)(d).

41 See e.g. Jescheck, H.-H.; Weigend, T., *Lehrbuch des Strafrechts. Allgemeiner Teil,* Duncker & Humblot, Berlin, 1996, pp. 577 - 582.

42 See more in Martinez, *op. cit.,* note 29, p. 644.

43 *Ibid.,* pp. 644 – 645.

44 Blomsma, J., *Fault elements in EU criminal law: the case for recklessness*, in: Klip, A. (ed.), Substantive Criminal Law of the European Union, Maklu, Antwerpen, 2011, pp. 139 – 159.

pretations that only *dolus eventualis* is possible.[45] However, this type of liability is interpreted somewhat more broadly, taking into account whether the commander took into account the profiles of the (subordinated) perpetrators during the formation of the troops, taking into account their level of education prior experience, past life and possible revenge motivations (for example, whether members of their families were killed in the war=the risk of the presence of possible victims in a particular area, the clarity of thein light of international humanitarian law, etc.[46] This indirectly establishes a legal standard comparable to the violation of due care as the basis for (civil law) negligence.

As the practice of international criminal law based on the synthesis of common law and civil law standard (with a certain prevalence of common law), it is clear that there divergent interpretations in this area as well. It should be noted here that the negligent form of command responsibility is defined differently in the statutes of international criminal courts. The statutes of the ad hoc tribunals for Yugoslavia and Rwanda refer to the term „*had reason to know*",[47] while the Rome Statute deploys a somewhat different formulation of „*should have known*".[48] The practice of ad hoc tribunals sometimes excludes the possibility of negligence for command responsibility, which was the case in the *Bigilishema* judgment in which the ICTR warned that the „*references to „negligence" in the context of superior responsibility likely to lead to confusion of thought*".[49] This position was also expressly endorsed by the ICTY in the *Blaškić* judgment.[50] On the other hand, the practice of the ICC explicitly affirms that the *should have known* standard refers to negligence and that it is a different standard from *had reason to know* because the latter does not cover the duty of the commander to be familiar with the activities of their subordinates and that the breach of this duty automatically implies command responsibility.[51] This interpretation is largely accepted in literature as well.[52]

---

45 That is the case in Croatian jurisprudence, due to the fact that at the time of commiting these crimes, negligent form of command liability was not yet implemented in domestic law. See e.g. Supreme Court of the Republic of Croatia*, Case No. I Kž 397/2016*, 15 January 2019, p. 2. Serbian jurisprudence, however, *a limine* rejects the concept of superior responsibility, due to the same reason.

46 See e.g. Supreme Court of the Republic of Croatia*, Verdict No. I Kž 1008/2008-13,*18 November 2009.

47 ICTY Statute, Article 7 (3); ICTR Statute, Article 6 (3).

48 Rome Statute, Article 28 (a) (i).

49 *Supra* note 32, para. 35

50 *Prosecutor vs. Tihomir Blaškić*, Appeals Chamber Judgement (ICTY), Case No. IT – 95 – 14 – A, 29 Jul 2004, para. 63.

51 *Prosecutor vs. Jean-Pierre Bemba Gombo,* Pre-Trial Chamber II Decision (ICC), Case No. ICC-01/05-01/08, 15 Jun 2009, para. 429 - 434.

52 See Meloni, C., *Command Responsibility in International Criminal Law,* TMC Asser Press, Den Haag, 2010, pp. 183 – 184. For opposite standpoint see Martinez, *op. cit.,* note 29, pp. 660 – 664.

The elaboration above shows that the negligent standard of command responsibility is still controversial, unclear and difficult to prove. In the following sections, we will put this issue in the context of warfare with autonomous and semi-autonomous weapons and the command responsibility for violations of international warfare and humanitarian law committed through the use of such weapons. Currently, the most realistic situation is similar to the one that unfolded after the crash of the civilian airplane of Iran Air 655: the ATR gave the wrong information on the identification of the target, based on which the human hand gave the final command for the activation of the weapon which destroyed a civilian instead of a military target in violation of international criminal law (for example, committing a war crime). This issue has already captured the attention of certain authors who analyze it from the perspective of the violation of the principle of distinction between legal and illegal targets in warfare, as one of the key principles of international humanitarian law and warfare law. These authors warm that the Rome Statute requires intent of the perpetrator for command liability for war crimes, in the form of a conscious and willful targeting of civilian targets. requires. It is also questionable whether this includes *dolus eventualis* as well. According to these authors, it is not sufficient because in such cases, the cognitive activity of the human behind the machine is a result of an interaction with an autonomous system which is based on the reliance on the accuracy of the data provided by this system. However, this brings into question the interpretation according to which the human is not even aware of the risk of striking civilian targets (which is a constitutive characteristic of *dolus eventualis*), to which they allegedly consent. In this sense, there is also room to connect an error in fact, which is recognized by the Rome Statute as a legitimate ground for the exclusion of criminal liability. Therefore, these authors warn of a responsibility gap, which already exists in international criminal law related to warfare with autonomous weapons.[53] In addition, the jurisprudence of international criminal courts has applied a rigid interpretation of liability in the context of the destruction of civilian targets as a characteristic of war crimes. Thus, the ICC practice in this respect holds the position that the perpetrator must act with *dolus directus*.[54] The ICTY took a broader interpretation in such cases, allowing *dolus eventualis*[55] or even *recklessness*.[56]

---

53 Bo, M., *Autonomous Weapons and the Responsibility Gap in light of the Mens Rea of the War Crime of Attacking Civilians in the ICC Statute*, Journal of International Criminal Justice, Vol. 19, No. 2, 2021. pp. 275 – 299.

54 *Prosecutor vs. Germain Katanga*, Trial Chamber II Judgement (ICC), Case No. ICC-01/04-01/07, 7 March 2014, para. 808.

55 *Prosecutor vs. Prlić et al,* Trial Chamber III Judgement (ICTY), Case No. IT – 04 – 74 – T, 29 May 2013, para. 192.

56 *Prosecutor vs. Stanislav Galić,* Trial Chamber III Judgement (ICTY), Case No. IT – 98 – 29 – T, 5 December 2003, para. 55.

Other authors, analyzing the issue of the applicability of the doctrine of command responsibility to crimes committed by autonomous weapons warn that the doctrine primarily relates to (superior and subordinate) persons, and not the relationship between humans and machines. If this doctrine would be applied to cases involving autonomous weapons, it would entail the application of legal rules such as *in dubio contra reum* and prohibited analogy, which is contrary to the fundamental criminal law postulates. Furthermore, command responsibility can exist only if there is a liability on the side of the subordinate perpetrators, which is also questionable in this case.[57] For these reasons, there are some proponents of a modified command responsibility according to the so-called „*dynamic diligence*" standard. According to this standard, the commander must ensure „*continual adjustments in the machine-human interface*", which will be conducted by adequately trained persons; must ensure that the assessments of the system were compatible with the standards of international humanitarian law; and ensure the „*flexibility in the parameters governing the machine's operation, with a presumption favoring interpretability of the AWS's outputs".* A failure to fulfill any of the listed duties would automatically lead to the criminal liability of the commander.[58] However, here one could ask the question of the approach if the commander undertakes the listed steps, but there are serious crimes and significant casualties regardless. In addition, it would be difficult to if not impossible to establish uniform technical standards for this type of maintenance and updating of the system, which would be the basis for the assessment of the commanders' compliance with the standard. Finally, it appears that the dynamic diligence criterium would open a lot of space for the invocation of the error of facts defense, thanks to the need for familiarity with advanced technologies, which requires advance knowledge, which most military commanders do not and must not possess. Therefore, this concept appears insufficiently clear at best and potentially impracticable. Other authors propose a significant reduction of the *mens rea* standard in the sense that a person will be considered liable if they are aware of the risk level of their conduct in principle, even if they are not conscious of (or willfully neglecting) the concrete source of this risk.[59] However, such an expansion of the *mens rea* standard would bring into question one of the fundamental principles of criminal law and it would indirectly introduce a strict liability of commanders. The issue will not be completely resolved either by the acceptance of

---

57 *Supra* note 15, pp. 140 – 146.

58 Margulies, P., *Making Autonomous Weapons Accountable: Command Responsibility for Computer-Guided Lethal Force in Armed Conflicts*, in: Ohlin, J. D. (ed.), Research Handbook on Remote Warfare, Edward Elgar Press, Cheltenham – Northampton, 2019, pp. 405 – 442.

59 Jain, N., *Autonomous Weapons Systems: New Frameworks for individual Responsibility*, in: Bhuta, N. et al (eds.), Autonomous Weapons Systems: Law, Ethics, Policy, Cambridge University Press, Cambridge, 2016, p. 303.

the ideas of the proponents of the establishment of criminal liability of states, i.e. expanding criminal liability of legal entities in international criminal law.[60] Namely, this liability is not independent, but it also entails the liability of a (responsible) natural person, so the ultimate result will be the same.

Based on the foregoing, it can be concluded that the issue of the responsibility gap has been identified at the theoretical level, but there is no solution offered to date. On the other hand, practice has also not offered the interpretative criteria which would be useful in this context, especially with regards to the *should have known* standard which is more of a doctrinal than practical concept. It is clear that the fundamental principles of criminal law (the principle of liability, *in dubio pro reo* and the prohibition of analogy) are obstacles to a simple expansion and "adaptation" of the existing concept of command responsibility to situations of warfare with autonomous and semi-autonomous weapon systems. An additional issue is the causality of the (failure to) act of the commander, which is equally controversial in international and national practice of criminal law.[61] The situation in this respect will be even more difficult as the autonomy levels of these weapons increase, so it is conceivable in the near future that no legal system will be able to offer an adequate solution to the issue of command responsibility. Such a scenario is naturally unacceptable, especially taking into account the severity of the criminal offenses in question and their risk factor for the entire international community. Although weapons are increasingly built on autonomous artificial intelligence, it is a fact that victims remain human and there is a legal gap in this respect that can pose a great danger for the further development of modes of warfare. The emergence of wars without boundaries, with no liability and responsible persons are not permissible, which is why an adequate concept should be developed for the future. The next, final chapter of this paper will be dedicated to this issue.

4. CONCLUSION: AI COMMAND RESPONSIBILITY *DE LEGE FERENDA*?

The preceding elaborations show that none of the existing and proposed concepts provides an adequate and complete solution, which is why we endorse the position that the development of autonomous weapons should be halted.[62] At the

---

60 See more about that in *supra* note 15, pp. 146 – 150.

61 The problem of causality is, however, beyond the scope of this article. For more about that see e.g. Schabas, W. A., *The International Criminal Court, A Commentary on the Rome Statute,* Oxford University Press, Oxford – New York, 2010, pp. 461 – 462.

62 See e.g. Human Rights Watch, *Stopping Killer Robots, Country Positions on Baning Fully Autonomous Weapons and Retaining Human Control*, 2020, [https://www.hrw.org/report/2020/08/10/stopping-killer-robots/country-positions-banning-fully-autonomous-weapons-and], Accessed 9 August 2022.

same time, we are aware of the fact that such a scenario is not likely because none of the major forces wants to lose the race to arms and the development of a powerful army, which would happen with the abandonment of autonomous weapons. Such a development is even more unrealistic taking into account the contemporary geopolitical situation in certain parts of the world, such as the war in Ukraine and the instability in certain parts of the world (Taiwan, Kosovo, etc). This is why there should be further efforts to develop an adequate concept of command liability. Here it is necessary to devise a model that will be accepted globally, and which would enable the creation of a minimum standard of rules going towards harmonization. This is very important if we take into consideration that the technological advancement of warfare is actually a global phenomenon.

The institute of command responsibility, even with the broadest possible interpretation of the *should have known* standard can suffice only in situations where a violation of an objectively determinable duty of the commander can be proven. This would include situations of the violation of the duty of regular maintenance and testing of the autonomous systema, a decision to use a system that is not sufficiently tested, or which is still in the experimental phase, entrusting the operation of the system to inadequately trained personnel, failure to organize an adequate training, different measures that hinder the safety of the operation of the system, etc. In the case of such violation, it would be possible to construe the legal standard of the violation of the duty of due care, which can be the basis for the negligent form of command responsibility (under the assumption that the judicial practice will be open such an interpretation. However, this institute will simply not be sufficient in situations where the commander invests all the necessary efforts, and especially if the weapon systems are fully autonomous (both in the phase of targeting and striking). In such cases the combined issues of the principles of liability, causality, and prohibited analogy will preclude criminal liability.

In order to overcome this issue, the only solution to the problem would be the introduction of a new (international) criminal offense of abstract endangerment, in which the zone of criminality would be moved one step forward so the commander would be liable only for a (bad) selection of autonomous weapon systems, which would cause an abstract danger for a protected object. The *Actus reus* of such a criminal offense would, at a minimum, entail the fulfillment of the following requirements: a) the perpetrator is a civil or military commander; b) in a *de iure* and *de facto* capacity to select the weapon; c) a decision to deploy the weapon in an area with a certain number of civilians and civil targets)which puts them in abstract danger) and d) the occurrence of certain consequences such as death, severe physical injury or destruction of civilian targets. The *mens rea* would consist of the awareness of the commander of the requirements a-c and their acceptance

of the abstract danger (a form of *dolus eventualis*), or their failure to raise awareness on the requirements, under the condition that the commander could have been and was aware of the requirements (a form of the *should have known* standard). It should be noted here that the *mens rea* could not include any subjective relationship towards the consequences under d) because this would imply command responsibility for war crimes. The described new criminal offense, which will be called *the endangerment of civilian targets by autonomous weapons,* would be less severe than the classic war crime, but at the same time, the range of the prescribed sentence would be broad be broad enough to adequately assess, in sentencing, the scope of the resulting consequences the danger of the act itself and the ensuing damage. This solution could, on the one hand, avoid the trap of the violation of the fundamental principles of criminal law, while at the same time, ensuring that the responsible persons bear the burden of responsibility. In addition, such a solution would have a solid basis in criminal policy because the choice of warfare with autonomous weapons entails the assumption of enhanced guarantee duties towards society and the international community at large.

Finally, we note that the aim of this paper is to foster future discussions on the development of an adequate model of command responsibility for crimes committed by autonomous weapon systems, in circumstances where it is unlikely that such a form of weapons will be stopped. This suggestion is susceptible to further modifications and expert dialogue from the *common law* and *civil law* legal tradition. However, the tendency should be towards a solution that would be acceptable from the perspective of international criminal law, which would also be in line with national legislation, in order to ensure that the perpetrators do not escape justice. In this sense, we hope that the dialogue on this topic will intensify in the forthcoming period.

REFERENCES

BOOKS AND ARTICLES

1. Amoroso, D., *Autonomous Weapons Systems and International Law. A Study on Human-Machine Interactions in Ethically and Legally Sensitive Domains*, Nomos, Napoli, 2020
2. Bassiouni, M. C., *Introduction to International Criminal Law*, *Second Revised Edition*, Brill-Nijhof, Leiden, 2014
3. Blomsma, J., *Fault elements in EU criminal law: the case for recklessness*, in: Klip, A. (ed.), Substantive Criminal Law of the European Union, Maklu, Antwerpen, 2011, pp. 135 – 159
4. Bo, M., *Autonomous Weapons and the Responsibility Gap in light of the Mens Rea of the War Crime of Attacking Civilians in the ICC Statute*, Journal of International Criminal Justice, Vol. 19, No. 2, 2021. pp. 275 – 299

5. Bonafé, B. I., *Finding a Proper Role for Command Responsibility*, Journal of International Criminal Justice, Vol. 5, No. 3, 2007, pp. 599 – 618
6. Ching, A. B., *Evolution of the Command Responsibility Doctrine in Light of the Celebici Decision of the International Criminal Tribunal for the Former Yugoslavia,* North Carolina Journal of International Law, Vol. 25, No. 1, 1999, pp. 167 – 205
7. Gill, A. S., *The Role of the United Nations in Addressing Emerging Technologies in the Area of Lethal Autonomous Weapons,* UN Chronicle, Vol. 55, No. 4., 2019, pp. 15 – 17
8. Grut, C., *The challenge of autonomous lethal robotics to international humanitarian law*, Journal of Conflict and Security Law, Vol. 18, No. 1, 2013, pp. 5–23
9. Jain, N., *Autonomous Weapons Systems: New Frameworks for individual Responsibility*, in: Bhuta, N. et al (eds.), Autonomous Weapons Systems: Law, Ethics, Policy, Cambridge University Press, Cambridge, 2016, pp. 303-324
10. Jescheck, H.-H.; Weigend, T., *Lehrbuch des Strafrechts. Allgemeiner Teil,* Duncker & Humblot, Berlin, 1996
11. Margulies, P., *Making Autonomous Weapons Accountable: Command Responsibility for Computer-Guided Lethal Force in Armed Conflicts*, in: Ohlin, J. D. (ed.), Research Handbook on Remote Warfare, Edward Elgar Press, Cheltenham – Northampton, 2019, pp. 405 – 442
12. Martinez, J. S., *Understanding Mens Rea in Command Responsibility*, Journal of International Criminal Justice, Vol. 5, No. 3, 2007, pp. 638-664
13. Matthias, A., *The Responsibility Gap: Ascribing Responsibility for the Actions of Learning Automata,* Ethics and Information Technology, Vol. 6, No. 3, 2004, pp. 175 - 183
14. Mauri, D., *Autonomous Weapons Systems and the Protection of Human Persons – An International Law Analysis*, Edward Elgar Publishing, Cheltenham – Northampton, 2022
15. Meloni, C., *Command Responsibility in International Criminal Law,* TMC Asser Press, Den Haag, 2010
16. Postma, J., *Drones over Nagorno-Karabakh,* Atlantisch Perspectief , Vol. 45, No. 2, 2021, pp. 15–20
17. Satzger, H., *International and European Criminal Law,* C. H. Beck – Hart – Nomos, München – Oxford, 2012
18. Schabas, W. A., *The International Criminal Court, A Commentary on the Rome Statute,* Oxford University Press, Oxford – New York, 2010
19. Scharre, P., *Centaur Warfighting: The False Choice of Humans vs. Automation,* Temple International and Comparative Law Journal, Vol. 30, No. 1, 2016, pp. 151-165

INTERNATIONAL CRIMINAL COURT

1. *Prosecutor vs. Germain Katanga*, Trial Chamber II Judgement (ICC), Case No. ICC-01/04-01/07, 7 March 2014
2. *Prosecutor vs. Jean-Pierre Bemba Gombo,* Pre-Trial Chamber II Decision (ICC), Case No. ICC-01/05-01/08, 15 June 2009

INTERNATIONAL CRIMINAL TRIBUNAL FOR RWANDA

1. *Prosecutor vs. Bagilishema,* Appeals Chamber Judgement (ICTR), Case No. ICTR – 95 – 1A-A, 3 July 2002

INTERNATIONAL CRIMINAL TRIBUNAL FOR THE FORMER YUGOSLAVIA

1. *Prosecutor vs. Prlić et al,* Trial Chamber III Judgement (ICTY), Case No. IT – 04 – 74 – T, 29 May 2013
2. *Prosecutor vs. Stanislav Galić,* Trial Chamber III Judgement (ICTY), Case No. IT – 98 – 29– T, 5 December 2003
3. *Prosecutor vs. Tihomir Blaškić*, Appeals Chamber Judgement (ICTY), Case No. IT – 95 – 14 – A, 29 July 2004

INTERNATIONAL DOCUMENTS

1. UN General Assembly, Rome Statute of the International Criminal Court (last amended 2010), 17 July 1998
2. UN Security Council, Statute of the International Criminal Tribunal for Rwanda (as last amended on 13 October 2006), 8 November 1994
3. UN Security Council, Statute of the International Criminal Tribunal for the Former Yugoslavia (as amended on 17 May 2002), 25 May 1993

LIST OF NATIONAL REGULATIONS, ACTS AND COURT DECISIONS

1. Croatian Criminal Code, Official Gazette No. 125/2011, 144/2012, 56/2015, 61/2015, 101/2017, 118/2018, 126/2019, 84/2021, 114/2022
2. Völkerstrafgesetzbuch, BGBl. I S. 2254, BGBl. I S. 3150
3. Supreme Court of the Republic of Croatia, Verdict No. I Kž 1008/2008-13, 18 November 2009
4. Supreme Court of the Republic of Croatia, Case No. Kž-rz 22/2018
5. Supreme Court of the Republic of Croatia, Case No. I Kž 397/2016, 15 January 2019

REPORTS

1. Boulanin, V.; Verbruggen, M., *Mapping the Development of Autonomy in Weapon Systems*, SIPRI, Solna, 2017
2. American Law Institute, Model Penal Code, 1962

WEBSITE REFERENCES

1. Simple Flying, *34 Years Ago Today: The Shootdown Of Iran Air Flight 655*, 2022, [https://simpleflying.com/iran-air-flight-655-1988-shootdown-anniversary/], Accessed 27 July 2022

2. European Parliament, *Eurpean Parliament Resolution of 16 February 2011 on the 2010 progress report on Croatia*, [https://www.europarl.europa.eu/doceo/document/TA-7-2011-0059_EN.pdf], Accessed 1 August 2022
3. Human Rights Watch, *Stopping Killer Robots, Country Positions on Baning Fully Autonomous Weapons and Retaining Human Control*, 2020, [https://www.hrw.org/report/2020/08/10/stopping-killer-robots/country-positions-banning-fully-autonomous-weapons-and], Accessed 9 August 2022
4. HAROP, *Loitering Munition System*, [https://www.iai.co.il/p/harop], Accessed 28 July 2022
5. The Messenger, *The Ukraine War in data: Winning the drone war*, [https://www.grid.news/story/global/2023/01/05/the-ukraine-war-in-data-winning-the-drone-war/], Accessed 13 February 2023
6. UK Ministry of Defence, *Joint Doctrine Publication 0-30.2., Unmaned Aircraft Systems*, 2017,[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/673940/doctrine_uk_uas_jdp_0_30_2.pdf], Accessed 28 July 2022
7. United Nations Institute for Disarmament Research (UNIDIR), *Safety, Unintentional Risk and Accidents in the Weaponization of Increasingly Autonomous Technologies*, Geneva, 2016, [https://unidir.org/publication/safety-unintentional-risk-and-accidents-weaponization-increasingly-autonomous], Accessed 28 July 2022
8. US Department of Defense, *Directive No. 3000.09*, 2017, [https://www.esd.whs.mil/portals/54/documents/dd/issuances/dodd/300009p.pdf], Accessed 28 July 2022