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Loitering Munitions in Light of International Humanitarian Law

Abstract

The article addresses the growing importance of loitering munitions in contemporary armed conflicts in light of international humanitarian law. The analysis presents the technical conditions for the operation of loitering munitions and underscores the increasing integration with artificial intelligence systems, leading to the increased autonomy of loitering munitions. The use of loitering munitions is then analyzed from the perspective of the fundamental principles of international humanitarian law: distinction and proportionality. The necessity for this analysis arises from the lack of dedicated treaty solutions governing the use of loitering munitions in armed conflict, resulting in their disproportionate and indiscriminate use. The article offers a valuable contribution to the discussion on the legality and proper use of loitering munitions as a highly advanced and forward-looking means of warfare.

Keywords: loitering munition, international humanitarian law, artificial intelligence, drones, lethal autonomous weapons systems

Amunicja krążąca w świetle międzynarodowego prawa humanitarnego

Streszczenie

Artykuł porusza problematykę rosnącego znaczenia amunicji krążącej we współczesnych konfliktach zbrojnych w świetle międzynarodowego prawa humanitarnego. Przeprowadzona analiza przedstawia warunki techniczne funkcjonowania amunicji krążącej i wskazuje na rosnącą integrację z systemami sztucznej inteligencji, prowadzącą do wzrostu stopnia jej autonomiczności. Użycie amunicji krążącej zostaje następnie poddane analizie prawnej z perspektywy fundamentalnych zasad międzynarodowego prawa humanitarnego: rozróżniania i proporcjonalności. Konieczność tej analizy wynika z braku dedykowanych rozwiązań traktatowych regulujących użycie amunicji krążącej w konfliktach zbrojnych, skutkujące jej nieproporcjonalnym i niekontrolowanym użyciem. Artykuł stanowi cenny wkład do dyskusji nad legalnością i prawidłowym sposobem użycia amunicji krążącej jako wysoce zaawansowanego i przyszłościowego środka walki.

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Słowa kluczowe: amunicja krążąca, międzynarodowe prawo humanitarne, sztuczna inteligencja, drony, autonomiczne systemy broni śmiertelności

1. Introduction

In the interview conducted on the 28th of April 2021, former head of United States Central Command, General Kenneth F. McKenzie Jr., admitted that one of the things that keeps him up at night is the widespread use of small unmanned aerial platforms on the battlefield.¹ Indeed, his concerns were justified, and after almost 4 years since he has expressed them, they are not as evident as they are nowadays. The rapid proliferation of drones used for military purposes has shown great potential and effectiveness of this technology.² One of the types of means of warfare which is closely related to drones and has gained significant attention is the so-called loitering munition. Even though loitering munitions have been developed since the 1980s, their extensive use in armed conflicts of the 21st century, such as the Nagorno-Karabakh, Israel-Hamas and Russia-Ukraine armed conflicts, has sparked a global discussion on moral and legal issues arising from this type of weapon.³

Development and deployment of loitering munitions align with concerns regarding lethal autonomous weapons systems (LAWS)⁴ since they are more frequently integrated with automated, autonomous and AI technologies.⁵ These problems refer to errors in the design and development of LAWS or algorithms' malfunctions, errors in human-machine relations, and varying degrees of autonomy limiting or even erasing human supervision (a problem known as „man out of the loop”).⁶ All these leave uncertainties regarding the compliance of the use of loitering munition with international humanitarian law (IHL) and raise serious questions about accountability, humanitarianism, and moral aspects of their use.⁷ The problem is even more serious when noting that not all state parties to the Geneva Conventions of 1949⁸ are parties to the Additional Protocol I.⁹ Hence, it is imperative to take a stab at addressing those issues by analysing the use of loitering munition in light of the norms of IHL, as the customary IHL applies to its use.

1 E. McCusker, *General Kenneth F. McKenzie Jr. AEI Transcript*, U.S. Central Command, 29.04.2021, <https://www.centcom.mil/MEDIA/Transcripts/Article/2589847/general-kenneth-f-mckenzie-jr-aei-transcript-april-28th-2021/> (accessed: 03.02.2025).

2 E. Jasiuk, A. Chochowska, K. Chochowski, *Legal Dilemmas of Drone Development in Poland*, „Journal of Intelligent & Robotic Systems” 2024, vol. 110(2), pp. 2–4.

3 I. Bode, T.F.A. Watts, *Loitering Munitions and Unpredictability: Autonomy in Weapon Systems and Challenges to Human Control*, Odense 2023, p. 1; J. Lake, *Weapons That Watch and Wait*, Armada International, 25.09.2024, <https://www.armadainternational.com/2024/09/weapons-that-watch-and-wait/> (accessed: 03.02.2025).

4 International Committee of the Red Cross (ICRC), *International Committee of the Red Cross (ICRC) Position on Autonomous Weapon Systems: ICRC Position and Background Paper*, „International Review of the Red Cross” 2020, vol. 102(915), pp. 1343–1347.

5 I. Bode, T.F.A. Watts, *Loitering...*, pp. 1, 25–27.

6 International Committee of the Red Cross (ICRC), *Position...*, p. 1341; R. Bwana, *Kicking Man Out of the Loop: The Case of Loitering Munitions and Implications for International Humanitarian Law*, pp. 7–8; E. Jasiuk, A. Chochowska, K. Chochowski, *Legal...*, p. 78; D. Gettinger, A.H. Michel, *Loitering Munitions in Focus*, Center for the Study of the Drone, 10.02.2017, p. 4, <https://dronecenter.bard.edu/files/2017/02/CSD-Loitering-Munitions.pdf> (accessed: 03.02.2025); J. Lake, *Weapons...*

7 R. Bwana, *Kicking...*, pp. 7–8; International Committee of the Red Cross (ICRC), *Position...*, pp. 1342–1346; D. Gettinger, A.H. Michel, *Loitering...*, p. 4; A.G. Jain, *Autonomous Weapon Systems, Errors and Breaches of International Humanitarian Law*, „Journal of International Criminal Justice” 2023, vol. 21(5), pp. 1005–1007.

8 Geneva Convention for the Amelioration of the Condition of the Wounded and Sick in Armed Forces in the Field, of 12 August 1949; Geneva Convention for the Amelioration of the Condition of Wounded, Sick and Shipwrecked Members of Armed Forces at Sea, of 12 August 1949; Geneva Convention relative to the Treatment of Prisoners of War, of 12 August 1949; Geneva Convention relative to the Protection of Civilian Persons in Time of War, of 12 August 1949.

9 Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), of 8 June 1977. List of state parties to the Additional Protocol I is available at: <https://ihl-databases.icrc.org/en/ihl-treaties/api-1977/state-parties?activeTab=default>.

The hypothesis of this article is that there is a need for a new legally binding international treaty regulating the use of loitering munition. The analysis presented in this article starts with section 2, where the key terms used in the paper are defined. After that, section 3 determines the applicability of IHL to the use of loitering munition. Then, in section 4, the author highlights the issues with loitering munition in the context of their conformity with two fundamental IHL principles, namely the principle of distinction and proportionality. The paper ends with section 5, where the summary and conclusions are presented.

2. Defining the key terms

The first key term is drone, also known as an unmanned aerial vehicle (UAV). It can be understood as “an aircraft that does not carry a human operator and is operated remotely using varying levels of automated functions, can be expendable or recoverable and may carry a lethal or non-lethal payload”.¹⁰ At the same time, rockets and cruise missiles are not considered UAVs.¹¹ This definition is expanded by the term “unmanned aircraft system”, which refers to all components, for instance, equipment and personnel, needed to exploit the UAV.¹²

The second key term is loitering munition, which is defined as “a weapon system that can loiter in the air for a certain period of time after deployment, before engaging a target”.¹³ Loitering munition engage the enemy once he or she is identified.¹⁴ Another key feature is that it is designed to be disposable, meaning that once it has been launched and attacked the target, it is destroyed and cannot be recovered,¹⁵ and that is why it is sometimes referred to as “kamikaze” or “suicide” drone.¹⁶ For instance, the Israeli IAI Harpy is classified as a „fire-and-forget” weapon.¹⁷ Loitering munitions are portable¹⁸ and can differ in size, weight, technological sophistication and destination.¹⁹ According to their operational range, they can be divided into tactical (up to 50 km), medium range (from 50 to 150 km) and long range (150 km).²⁰ What is more, it is possible to distinguish anti-radiation, anti-armour and anti-personnel

10 UK Ministry of Defence, *Joint Doctrine Publication 0-30. UK Air Power*, p. 202, https://assets.publishing.service.gov.uk/media/636baad0d3bf7f1649c4e36d/UK_Air_Power_JDP_0_30.pdf (accessed: 02.07.2025). It is worth noting that NATO uses the term „unmanned aircraft”.

11 UK Ministry of Defence, *Joint...*, p. 202; M. Piątkowski, *Wojna powietrzna a międzynarodowe prawo humanitarne*, Łódź 2021, p. 716.

12 UK Ministry of Defence, *Joint...*, p. 202; M. Piątkowski, *Wojna...*, p. 717.

13 Group of Governmental Experts on Lethal Autonomous Weapons Systems, *Background paper on context-appropriate human judgement and control and the critical functions of LAWS*, CCW/GGE.1/2025/CRP.1 (accessed: 20.05.2025).

14 I. Bode, T.F.A. Watts, *Loitering...*, pp. 21–22.

15 Ibidem, p. 22; D. Gettinger, A.H. Michel, *Loitering...*, p. 1.

16 I. Kottasová, *Kamikaze drones are the latest threat for Ukraine. Here's what we know*, CNN, 17.10.2022, <https://edition.cnn.com/2022/10/17/europe/kamikaze-drones-explained-update-intl/index.html> (accessed: 03.02.2025); N.A. Iguh, F.C. Akubuilu, *The Position of International Humanitarian Law on The Use of Combat Drones in Armed Conflict*, „Unizik Law Journal” 2023, no. 18, p. 94.

17 *Harpy*, Israeli Weapons, <https://israeli-weapons.com/weapons/aircraft/uav/harpy/HARPY.html> (accessed: 02.03.2025).

18 I. Kottasová, *Kamikaze...*; D. Gettinger, A.H. Michel, *Loitering...*, p. 1.

19 I. Bode, T.F.A. Watts, *Loitering...*, p. 21; J. Lake, *Weapons...*

20 O. Zhugan, M. Degtyarev, *Version of loitering munitions classification based on the state-of-the-art and trends analysis*, „Space Science and Technology” 2024, vol. 30(3), p. 32.

systems.²¹ Switchblade 600, Switchblade 300, Lancet-3, Shahed 136, KUB-BLA, Kargu-2 or Warmate are only a few examples of modern loitering munitions widely used in contemporary armed conflicts.²²

Last but not least, clearly defining LAWS may be a challenging task since there are at least 12 different definitions of them provided by states and international organisations.²³ However, the Group of Governmental Experts on LAWS proposed the following definition “a lethal autonomous weapon system can be characterized as an integrated combination of one or more weapons and technological components that enable the system to identify and/or select, and engage a target, without intervention by a human user in the execution of these tasks”. The pivotal element of this definition is the autonomy of the weapon system, i.e., the ability to operate without a human operator. Technological components may include the integration of AI into the system.

3. Applicability of IHL to the use of loitering munitions

Presently, there is no IHL provision explicitly prohibiting the use of loitering munitions²⁴ and drones²⁵ in armed conflicts. Moreover, it has been emphasised that there is a broad agreement that drones per se are not illegal weapons.²⁶ The same conclusion can be drawn in terms of loitering munitions. Yet, their use ought to be strictly regulated. Nevertheless, Article 1(2) of Additional Protocol I states that „in cases not covered by this Protocol or by other international agreements, civilians and combatants remain under the protection and authority of the principles of international law derived from established custom, from the principles of humanity and from the dictates of public conscience”.²⁷ This provision is based on the well-known Martens clause, which is interpreted as meaning that something which is not explicitly prohibited by international law does not render it permitted.²⁸ The Martens clause proclaims the applicability of the principles of international law in all armed conflicts, regardless of subsequent developments of technology that are not provided for by treaty law.²⁹ What is more, loitering munitions are constrained by Articles 35 and 36 of Additional Protocol I, which govern methods and means of warfare. According to Article 35, the right of the belligerents to choose methods or means of warfare is not unlimited, and under Article 36, new weapons, means, or methods of warfare should be subject to a determination assessing whether their employment would be infringing rules of international law. This position was reiterated and reaffirmed by the International Court of Justice in *the Nuclear Weapons*

21 T.F.A. Watts, I. Bode, *Automation and Autonomy in Loitering Munitions Catalogue (v.1)*, pp. 4–63.

22 For presentation of various types of loitering munitions see: T.F.A. Watts, I. Bode, *Automation...*, pp. 4–63; O. Zhugan, M. Degtyarev, *Version...*; D. Gettinger, A.H. Michel, *Loitering...*; S. Sotoudehfar, J.J. Sarkin, *Drones on the Frontline: Charting the Use of Drones in the Russo-Ukrainian Conflict and How Their Use May Be Violating International Humanitarian Law*, „International and Comparative Law Review” 2023, vol. 23(2), pp. 147–154.

23 M. Taddeo, A. Blanchard, *A Comparative Analysis of the Definitions of Autonomous Weapons Systems*, „Science and Engineering Ethics” 2022, vol. 28(5), p. 5.

24 R. Bwana, *Kicking...*, p. 4.

25 N.A. Iguh, F.C. Akubuilu, *The Position...*, p. 97.

26 C. Heyns, D. Akande, L. Hill-Cawthorne, T. Chengeta, *The International Law Framework Regulating The Use of Armed Drones*, „International and Comparative Law Quarterly” 2016, vol. 65(4), p. 793.

27 Article 1(2) of Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), of 8 June 1977.

28 B. Zimmermann, [in:] *Commentary on the Additional Protocols to the Geneva Conventions of 8 June 1977 to the Geneva Conventions of 12 August 1949*, eds. Y. Sandoz, C. Swinarski, B. Zimmermann, Geneva 1987, p. 38; N.A. Iguh, F.C. Akubuilu, O.C. Nnabugwu, C.A. Onah, C.L. Iguh, *The Principle of Military Necessity and Use of Drone in Armed Conflict*, „International Journal of Comparative Law and Legal Philosophy” 2023, vol. 5(2), p. 114.

29 B. Zimmermann, *Commentary...*, p. 39.

advisory opinion, where the Court held that the principles of IHL apply „to all forms of warfare and to all kinds of weapons, those of the past, those of the present and those of the future”.³⁰

Even though currently there are neither international binding treaties as regards using LAWS³¹ nor the Convention on Certain Conventional Weapons³² that refer to them, the Group of Governmental Experts on LAWS affirmed that “IHL [...] continues to apply fully to the development and use of LAWS”.³³ It is worth pointing out that the United Nations General Assembly on the 2nd of December 2024, adopted a resolution on LAWS in which it affirms that „international law, including the Charter of the United Nations, IHL, international human rights law and international criminal law, applies in relation to autonomous weapons systems”.³⁴ Consequently, IHL is applicable both to the loitering munitions and LAWS, and their use ought to be scrutinised in the light of the principles of distinction and proportionality, which are labelled as „cardinal principles” of IHL.³⁵ It is also crucial to signal that customary IHL applies to both international and non-international armed conflicts.³⁶ Parts of the Additional Protocol I which are customary norms apply to the non-ratifying states as well,³⁷ because “there are no grounds for holding that when customary international law is comprised of rules identical to those of treaty law, the latter “supervenes” the former, so that the customary international law has no further existence of its own”.³⁸

4. Loitering munition under the principles of distinction and proportionality Principle of distinction

The principle of distinction is based on distinguishing between the civilian population and combatants and between civilian objects and military objectives by the belligerents.³⁹ According to Articles 51(2) and 52(1) of Additional Protocol I, civilians and civilian objects shall not be the object of attack. Legitimate

30 *Legality of the threat or use of nuclear weapons*, Advisory Opinion, I.C.J. Reports 1996, para. 86.

31 M. Piątkowski, *Wojna...*, p. 739.

32 The Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May Be Deemed to Be Excessively Injurious or to Have Indiscriminate Effects, Text with amendments and protocols adopted through 28 November 2003.

33 Group of Governmental Experts on Lethal Autonomous Weapons Systems, *Rolling text*, 8 November 2024, [https://docs-library.unoda.org/Convention_on_Certain_Conventional_Weapons_-Group_of_Governmental_Experts_on_Lethal_Autonomous_Weapons_Systems_\(2024\)/Revised_rolling_text_as_of_8_November_2024_final.pdf](https://docs-library.unoda.org/Convention_on_Certain_Conventional_Weapons_-Group_of_Governmental_Experts_on_Lethal_Autonomous_Weapons_Systems_(2024)/Revised_rolling_text_as_of_8_November_2024_final.pdf) (accessed: 03.07.2025).

34 UN General Assembly, Resolution 79/62, Lethal Autonomous Weapons Systems, A/RES/79/62 (December 2, 2024); In this respect an interesting framework of applying IHL to autonomous systems is presented in: T. Zurek, J. Kwik, T. van Engers, *Model of a military autonomous device following International Humanitarian Law*, “Ethics and Information Technology” 2023, vol. 25(15).

35 *Legality of the threat or use of nuclear weapons*, para. 78.

36 M. Marcinko, *Some Legal Comments On “Transnational” Armed Conflicts*, [in:] *International Humanitarian Law*, ed. D. R. Bugajski, vol. XII, Gdynia 2021, p. 40; *Prosecutor v. Kordic and Cerkez*, Decision on the Joint Defence Motion to Dismiss the Amended Indictment for Lack of Jurisdiction Based on the Limited Jurisdictional Reach of Articles 2 and 3, ICTY, no. IT-95-14/2-PT, 02.03.1999, para. 31.

37 M. Piątkowski, *Co oznacza wypowiedzenie przez Federację Rosyjską Protokołu dodatkowego do Konwencji genewskich, dotyczącego ochrony ofiar międzynarodowych konfliktów zbrojnych?*, Obserwator Międzynarodowy, 22.10.2019, <https://obserwatormiędzynarodowy.pl/2019/10/22/co-oznacza-wypowiedzenie-przez-federacje-rosyjska-protokolu-dodatkowego-do-konwencji-genewskich-dotyczacego-ochrony-ofiar-miedzynarodowych-konfliktow-zbrojnych-komentarz-piatkowski/> (accessed: 03.07.2025).

38 *Military and Paramilitary Activities (Nicaragua. v. United States of America)*, Judgement, I.C.J Reports 1986 para. 177.

39 Article 48 of Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), of 8 June 1977.

targets include combatants, military objects, and civilians who take direct part in hostilities.⁴⁰ The idea behind this principle is the importance of assessing whether a person or object can be targeted and attacked. Thus, categories of combatants and non-combatants and civilian and military objectives can be discerned.⁴¹

The growing autonomy of loitering munitions is the first serious concern in the context of the principle of distinction. This means that „the user does not choose, or even know, the specific target(s) and the precise timing and/or location of the resulting application(s) of force”.⁴² In the case of loitering munitions, we can speak about the „wide area effects” problem, referring to uncertainties about the precise location of an attack, meaning that the capacity to discriminate between combatant and non-combatant can be diminished.⁴³ It has been observed that a degree of unpredictability is inherent in the effects of using all LAWS.⁴⁴ This unpredictability is compounded by applying AI to LAWS, making the understanding and explainability of LAWS functions harder due to the „black-box” problem with some AI systems.⁴⁵ „Black-box” problem refers to complex algorithms whose functioning or outcomes cannot be fully explained.⁴⁶ If the loitering munitions are integrated with algorithmic decision-making systems with no human supervision, and when the process of identifying, targeting and attacking is left alone to such a system, there is a possibility of failure in distinguishing between combatant and non-combatant or between a civilian object and military object, resulting in an indiscriminate attack.⁴⁷ AI on which the LAWS are based may be prone to algorithmic bias or trained on poor data quality, and there is also a possibility of LAWS malfunction, such as broken sensors.⁴⁸ Moreover, even though the loitering munitions use algorithmic decision-support systems, meaning there is a human control over it, there is still a risk of inattentiveness, cognitive overload or automation bias, and it is important to highlight that combatants deploying loitering munitions usually operate in highly stressful situations on the battlefield, which may affect their decision-making process.⁴⁹

Another problem is associated with the complexity of contemporary armed conflicts. Nowadays, armed conflicts often involve non-state actors operating within the civilian population.⁵⁰ These groups may be volunteer militias or organised armed groups who do not wear uniforms – the easiest means to differentiate combatants from non-combatants.⁵¹ Furthermore, IHL does not explain when a civilian is considered to take a direct part in hostilities, nor provide a catalogue of actions that can be deemed as direct participation in hostilities.⁵² As has been noted, civilians’ and combatants’ modes of participating

40 Articles 48, 51 and 52 of Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), of 8 June 1977.

41 K.P. Andersen, *A Blast from the Past: Armed Drones, International Humanitarian Law, and Imperial Violence*, Toronto 2022, p. 175.

42 International Committee of the Red Cross (ICRC), *Position...*, p. 1335.

43 I. Bode, T.F.A. Watts, *Loitering...*, p. 30.

44 International Committee of the Red Cross (ICRC), *Position...*, p. 1342.

45 Ibidem.

46 M. Marcinko, *Do Autonomous Weapon Systems Need Specific Rules of Engagement?*, [in:] *International Humanitarian Law*, ed. D. R. Bugajski, vol. XIV, Gdynia 2023, p. 80. More about the black-box, predictability and understandability in military AI see: A.H. Michel, *The Black Box, Unlocked: Predictability and Understandability in Military AI*, United Nations Institute for Disarmament Research, Geneva 2020.

47 R. Bwana, *Kicking...*, p. 3.

48 A.G. Jain, *Autonomous...*, p. 1008.

49 Ibidem.

50 International Committee of the Red Cross (ICRC), *International Humanitarian Law and the Challenges of Contemporary Armed Conflicts*, Geneva 2007, pp. 37–55.

51 K.P. Andersen, *A Blast...*, p. 177.

52 Ibidem, p.176.

in hostilities are extremely diverse.⁵³ This issue becomes even more challenging considering the indirect involvement of individuals in hostilities, for example, collecting intelligence or transporting combatants.⁵⁴ Questions about the distinction can also be asked about individuals who help armed groups in a limited way, such as low-level fighters or providers of minor logistical support.⁵⁵ Further, fighting can take place in populated areas, including cities, where circumstances can change dynamically, posing a risk of human or LAWS operating loitering munitions targeting civilians or civilian objects. Indeed, loitering munitions have been used in populated areas,⁵⁶ and the implementation of LAWS to its design, together with all its issues, only increases its potential indiscriminate effects.⁵⁷

5. Principle of proportionality

The principle of proportionality laid down in Article 51(5)(b) of Additional Protocol I requires that military actions are proportionate to the anticipated military advantage.⁵⁸ It aims to protect civilians and civilian objects from incidental harm and to minimise it while targeting military objectives.⁵⁹ Attacks that „may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, which would be excessive in relation to the concrete and direct military advantage anticipated” are considered indiscriminate and unlawful under IHL. Hence, the principle requires *ex-ante* proportionality assessment,⁶⁰ which considers potential injury and military gains and examines aspects like the nature of the target, the nature of the attack, and the presence of civilians.⁶¹ This assessment is conducted *ad hoc* every time.⁶²

The problem is that IHL does not provide any objective criteria for making a proportionality assessment; therefore, it becomes a determination based on values, and considering the existence of many competing values, it can adversely affect the assessment.⁶³ Noting the growing integration of loitering munitions with LAWS technology and AI, which can be prone to malfunctions or other aforementioned errors, the challenge is increased since such systems may not be able to independently conduct the proportionality assessment or conduct it improperly, leading to excessive collateral damage.

Drones, including loitering munitions, have expanded the temporal and spatial dimensions of their operations, increased the scope and speed of collecting data, resulting in a wider net of potential targets and have shortened the time between target identification, execution and battle damage assessment, therefore shifting proportionality assessment to „real-time”.⁶⁴ All this results in a more dynamic, congested and complex operating environment where humans already find it difficult to operate, and

53 International Committee of the Red Cross (ICRC), *Position...*, p. 1345.

54 A. Nehaluddin, R. Faizah, A. Nurulqayyimah, *Can International Humanitarian Law Regulate Recent Drone Strikes?: A Case Study*, „Journal of East Asia & International Law” 2024, vol. 17(1), pp. 168–169; K.P. Andersen, *A Blast...*, p. 176.

55 A. Nehaluddin, R. Faizah, A. Nurulqayyimah, *Can International...*, p. 168.

56 *Russian Lancet drone kills two, injures 10 in Chernihiv Oblast*, The New Voice of Ukraine, 23.06.2025, <https://english.nv.ua/nation/russian-loitering-munition-kills-civilians-in-village-attack-kids-among-10-wounded-50524197.html> (accessed: 02.07.2025).

57 I. Bode, T.F.A. Watts, *Loitering...*, pp. 9–12.

58 S. Sotoudehfar, J.J. Sarkin, *Drones...*, pp. 158–159.

59 A.G. Jain, *Autonomous...*, p. 1013; S. Sotoudehfar, J.J. Sarkin, *Drones...*, p. 159.

60 K.P. Andersen, *A Blast...*, p. 179; N.A. Iguh, F.C. Akubuilu, *The Position...*, p. 98.

61 A. Nehaluddin, R. Faizah, A. Nurulqayyimah, *Can International...*, p. 164.

62 K. Kowalczywska, *Sztuczna inteligencja na wojnie*, Warszawa 2021, p. 101.

63 K.P. Andersen, *A Blast...*, pp. 179–181.

64 *Ibidem*, pp. 190–226.

introducing LAWS only exacerbates the problem.⁶⁵ Loitering munitions deployed in densely populated areas may fail to conduct a proportionate attack, for instance, when civilians suddenly find themselves in the line of fire or there are military objectives with fluid identity, for example, bridges.⁶⁶ Increasing autonomy and automation of loitering munitions, the complexity of the battlefield, the increased amount of information, and the lack of precise guidelines do not facilitate addressing these problems.

The principle of proportionality requires a balance between military necessity and humanitarian principles. This can be achieved by ensuring that targets are legitimate military objectives, taking all feasible precautions to avoid or minimise civilian harm, and continuously assessing proportionality before and during attacks. One way to operationalise it is to include “lawyer in the loop”, i.e. a legal military advisor. In the context of the loitering munitions using algorithmic decision-making systems, this would also require constant updates of intelligence before and during attacks.⁶⁷ However, intrinsic problems of this technology make it hard for LAWS to comply with the principle of proportionality.⁶⁸

6. Conclusions

Loitering munition rapidly becomes an intrinsic part of the modern battlefield. Their capabilities allow them to fight the enemy efficiently. Integration of LAWS and AI into loitering munitions’ design will only enhance this efficiency. However, as promising as this technology seems to be in the context of new means and methods of warfare, its deployment raises serious legal, moral and accountability questions. Problems with human control, LAWS, and human-machine interaction may lead to discriminatory attacks and, as a consequence, violations of international law. International humanitarian law applies to the use of loitering munitions; therefore, their use has to abide by the principles of distinction and proportionality. Nevertheless, it has been observed that the current IHL regulatory framework is not adequate to fully grapple with the characteristics of modern warfare and new technologies.⁶⁹

Problems of LAWS in the context of loitering munitions could be solved by ruling out fully autonomous and unpredictable AI algorithms,⁷⁰ and prohibiting their use to target civilians.⁷¹ With regard to the loitering munitions using algorithmic decision-support systems operated by human, there should be strict regulations on their use.⁷² Moreover, current human control and assessment ought to be affirmed, retained and strengthened.⁷³ On a more general level, it is recommended that transparency, communication and compliance with the current regulatory IHL framework be promoted and accountability mechanisms bolstered.⁷⁴

⁶⁵ International Committee of the Red Cross (ICRC), *Position...*, p. 1346.

⁶⁶ Ibidem; I. Bode, T.F.A. Watts, *Loitering...*, p. 10.

⁶⁷ C. Martin, *Autonomous Weapons Systems and Proportionality: The Need for Regulation*, “Case Western Reserve Journal of International Law” 2025, vol. 57(1), p. 289, <https://scholarlycommons.law.case.edu/jil/vol57/iss1/21>

⁶⁸ Ibidem, p. 293.

⁶⁹ A.G. Jain, *Autonomous...*, pp. 1031–1032; International Committee of the Red Cross (ICRC), *Position...*, p. 1349; N.A. Iguh, F.C. Akubuilu, *The Position...*, p. 102.

⁷⁰ International Committee of the Red Cross (ICRC), *Position...*, p. 1348; R. Bwana, *Kicking...*, p. 9; I. Bode, T.F.A. Watts, *Loitering...*, p. 5.

⁷¹ International Committee of the Red Cross (ICRC), *Position...*, p. 1348.

⁷² Ibidem; I. Bode, T.F.A. Watts, *Loitering...*, p. 5.

⁷³ I. Bode, T.F.A. Watts, *Loitering...*, p. 5.

⁷⁴ A. Nehaluddin, R. Faizah, A. Nurulqayyimah, *Can International...*, pp. 178–179; I. Bode, T.F.A. Watts, *Loitering...*, p. 5.

No matter what solutions emerge in the ongoing debate, the best solution is to adjust IHL provisions by introducing a new legally binding international treaty regulating loitering munitions, including LAWS.⁷⁵ Such a treaty could provide clarity to vague provisions,⁷⁶ harmonise their interpretations, establish explicit prohibitions and restrictions, and ensure accountability in the use of new technologies.⁷⁷ The benefits would be legal certainty and stability,⁷⁸ serving as a starting point to govern the use of loitering munitions and ensuring adherence to IHL fundamental principles.

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