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Abstract

Technological advancement has resulted in the development of Autonomous Weapon Systems (AWS) to serve as an alternative weapon system in the battlefield. It has a fundamental difference with other weapons systems which lies in decision making carried out without human intervention. However, from a humanitarian point of view, AWS pose the risk of harming civilians and increasing the risk of conflict escalation; from a legal perspective, they challenge the ability to comply with legal obligations when planning an attack; and from an ethical standpoint, the system threatens to replace human decisions about life and death with those of sensors, software, and machines. Another challenge of the system is that it is very difficult for it to distinguish between combatants and non-combatants. AWS is vulnerable to hacking and it could be used by non-State actors (cartels or individuals) against the State, other non-State actors, or civilians. Identifying enemies that have become hors de combat could be challenged since it requires human judgment to determine whether the target is injured, needs medical treatment, or is faking an injury. Fully autonomous weapons could be used to oppress opponents without fearing protest, conscientious objection, or insurgency within state security forces. The paper adopted doctrinal method of research by relying on primary sources such as treaties and secondary sources such as books, articles and internet sources which resulted in findings that AWS is not unregulated; states are obliged to comply with IHL rules in the use of the systems. The IHL rules in question include specific and general prohibitions and restrictions on the use of AWS as a weapon, vehicle, and method of war. The rules also include obligations to conduct AWS legal reviews and provide legal advice, including guidance for the armed forces before and during armed conflict, involving AWS. Finally, states are required to take steps to address AWS-related IHL violations. The paper recommends that states should internally prohibit the use of autonomous weapon systems to target human beings. States should prohibit AWS that are designed or used in a manner such that their effects cannot be sufficiently understood, predicted and explained. Also, in order to protect civilians and civilian objects, uphold the rules of international humanitarian law and safeguard humanity, the design and use of autonomous weapon systems that would not be prohibited should

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be regulated by constraining them to objects that are military objectives and limiting the duration, geographical scope and scale of use of the said weapons.

Keywords: IHL, Autonomous Weapons System, AWS, Conflict, and Technology.

Introduction

Technology has changed the way of waging war and has brought about the development of Autonomous Weapons System (AWS). Thus, the use of force by the most militarily advanced states over the past two decades has been primarily 'long-range warfare', a “strategy of countering threats at a distance, without the deployment of large military forces”.¹

While some state civil society organizations are calling for complete ban of AWS,²China, the United Kingdom, the United States, the Russian Federation, France, South Korea, and Israel are leading in the development of artificial intelligence.³ Till date, more than 380 autonomous weapons have been developed in at least 12 States⁴ and Israel was the first country to claim that it has deployed an autonomous weapon system in the Gaza Strip “North Korea has deployed Samsung SGR 1 and SGR-Ai to patrol the demilitarized zone.”⁵

It is submitted that technologies are designed and created by people. There’s a concomitant responsibility to establish boundaries between what is acceptable and what is unacceptable. This paper therefore provides an opinion on the laws that should govern the development and use of AWS, especially with respect to the type and extent of human-computer interaction. It maps the limitations that IHL has imposed on the development and use of AWS and what IHL requires AWS users to do to meet IHL obligations

Overview of Autonomous Weapon Systems

¹Ingvild Bode and Hendrik Huelss, "Artificial Intelligence, Weapons Systems and Human Control" available at <https://www.e-ir.info/2021/02/16/artificial-intelligence-weapons-systems-and-human-control/> accessed on April 20, 2022

² Sai Venkatesh, “Legality of Autonomous weapons Systems and their Implications on Existing International Humanitarian Law Principles Approach: New haven School of Internal law Approach” (2019)7(1) *Groningen Journal of International Law* p. 124

³*Ibid*

⁴ Mattha Busby, “Killer Robot: Pressure Builds for Ban as Governments Meet” (2018) available at <https://www.theguardian.com/technology/2018/apr/oy/killer-obots-pressure-builds-for-ban-as-governments-meet> accessed on April 20, 2022.

⁵ Peter Warren Singer, "The Future of War will be Robotic" available at <https://edition.cnn.com/2015/02/23/opinion/singer-future-of-war-robotic/index.html> accessed on April 21, 2022

Before examining the rules of International Humanitarian law, it is apposite to first give an overview of Autonomous Weapons Systems. Even though there is no internationally accepted definition of the said weapons, they can be described as lethal devices empowered by their creators to monitor their surroundings, identify potential enemy targets and independently choose to attack these targets based on complex algorithms.⁶ Such systems require the integration of several central elements: a mobile combat platform, such as drones, ships or ground vehicles; sensors of various types to scan the surroundings of the platform; processing systems to classify the object detected by the sensor; and algorithms that instruct the platform to launch an attack when an authorized target is detected.

The major point about the weapon systems is their ability to independently identify targets and attack same without the intervention of a human being. Thus, the definition of Klare⁷ above is correct. A report defines them as *“weapons that, once activated, can identify and select targets and apply force to them without human intervention.”* This paper also agrees with the definition as same is a restatement of the position of the International Committee of the Red Cross (ICRC) which states that autonomous weapons system is *“any weapon system with autonomy in its critical functions - that is, a weapon system that can select and attack targets without human intervention.”*⁸

Emphasizing rightly on the artificiality and independence of the AWS, the United States Department of Defense, says it is *“A weapon system that once activated can select and engage targets without further intervention by a human operator.”*⁹ It should be noted that AWS are generally not completely human-free because human being can retain control of those weapons. However, they are also made in such a way that they can function without intervention of humans provided that human being must have programmed them to act in a certain way. This therefore raises quite a number of questions in the law of armed conflict otherwise known as International

⁶ Michael T. Klare "Autonomous Weapons Systems and the Laws of War" available at <https://www.armscontrol.org/act/2019-03/features/autonomous-weapons-systems-laws-war#endnote02> accessed on April 20, 2022

⁷ *Ibid*

⁸ Andrew P. Williams and Paul D. Scharre, “Autonomous Systems: Issues for Defense Policymakers” (HQ Sact, 2015) 33

⁹ Vincent Boulanin, Laura Bruun, and Netta Goussac “Autonomous Weapon Systems and International Humanitarian Law” (2021) Stockholm International Peace Research Institute available at https://www.sipri.org/sites/default/files/2021-06/2106_aws_and_ihl_0.pdf accessed on April 24, 2022

Humanitarian Law. Who will be liable for the action of the AWS? Are they currently regulated? If no, then to what extent can they be regulated?

How International Humanitarian Law Limits Autonomous Weapons Systems

International Humanitarian Law (IHL), also known as the Law of Armed Conflict, is a set of rules that set out restrictions and prohibitions that must be observed in armed conflicts, in both international and local levels.¹⁰ This section of the paper identifies and describes the key rules related to AWS. By outlining key rules, it aims to provide an overview of the procedural and content restrictions that IHL has imposed on the design and use of AWS. These regulations can be divided into two; i) the regulation of weapons, means and methods of warfare; and ii) the provision of legal opinions and advice.

Rules of weapons, means and methods of war

IHL rules that restricting the development and use of AWS can be classified into two categories: (a) rules prohibiting or restricting specific weapons, means, and methods of warfare, and (b) general prohibitions and restrictions on weapons, means and methods of war. However, it would be incomplete to assess the legitimacy of AWS without considering the Martens Clause, which states that under circumstances not covered by the IHL conventions, neither combatants nor civilians completely deprived of protection.¹¹

a. Specific rules prohibiting or restricting specific weapons, means and methods of warfare

Under IHL, AWS would be deemed inherently unlawful if it has one or more of the following characteristics:

- a) The weapon (or its injury mechanism) is already prohibited by a specific treaty, such as the prohibition on the use of biological weapons, chemical weapons, poison or blinding lasers.¹²

¹⁰ Ladan, M. T. *Materials and Cases on Public International law*, (Ahmadu Bello University Press Limited, 2007) p. 200

¹¹ Koutroulis, V., 'Martens Clause', Oxford Bibliographies, 24 July 2013.

¹² For example, the use of poison or poisoned weapons are prohibited by the Protocol for the Prohibition of the Use of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare, Geneva, signed 17 June 1925, entered into force 8 Feb. 1928; and the International Committee of the Red Cross (ICRC), Customary IHL Database,

- b) The weapon is of a nature to cause superfluous injury or unnecessary suffering.¹³
- c) The weapon is indiscriminate in nature, meaning that it cannot be aimed at a specific military target or its effects cannot be restricted as required by the IHL, so it is capable of striking indiscriminate attack on military targets and civilians or civilian subjects.
- d) Weapons intended or capable of causing widespread, long-lasting and severe damage to the natural environment.¹⁴

b. General prohibitions and restrictions on the conduct of hostilities

In the event that AWS is not inherently illegal, the use of AWS is still limited by general rules and prohibitions on the conduct of hostile acts. These prohibitions and restrictions have been established in a number of IHL treaties, including the Hague Conventions of 1899¹⁵ and 1907,¹⁶ the Geneva Conventions of 1949¹⁷ and the Additional Protocols of 1977, and are generally considered to be structural into the rules of the customary IHL.¹⁸

According to IHL, it is illegal to use AWS under any of the following circumstances:

- a) A bombardment attack, by any method or means, on a unique military objective located in cities, towns, villages or other areas with a population or similar civilian population.¹⁹
- b) An attack that is of a nature to strike military objectives and civilians or civilian objects without distinction, because
 - a. the attack is not directed at a specific military objective,
 - b. the attack employs a method or means of combat which cannot be directed at a specific military objective, or
 - c. the attack employs a method or means of combat the effects of which cannot be limited as required by IHL.²⁰

¹³ ‘Rule 72. Poison and poisoned weapons’ and the use of nuclear weapons prohibited by Treaty on the Prohibition of Nuclear Weapons (TPNW), opened for signature 20 Sep. 2017, entered into force 22 Jan. 2021.

¹⁴ Protocol I Additional to the 1949 Geneva Conventions, and Relating to the Protection of Victims of International Armed Conflicts, opened for signature 12 Dec. 1977, entered into force 7 Dec. 1978, Article 35(2); and ICRC, Customary

¹⁵ Additional Protocol I, articles 35(3) and 55;

¹⁶ Convention Respecting the Rights and Duties of Neutral Powers and persons in Case of War on Land laws and customs of war on Land, 1907

¹⁷ Convention (V) with Respect to the Laws and customs of war on Land, 1899

¹⁸ Geneva Convention Relative to the Protection of Civilian Persons in Time of War (Fourth Geneva Convention) 1949

¹⁹ ICRC, Customary IHL Database, rules 1–86.

²⁰ Additional Protocol I, Article 51(5)(a); and ICRC, Customary IHL Database, ‘Rule 13. Area bombardment’.

²¹ Additional Protocol I, Article 51(4)(a); and ICRC, Customary IHL Database, ‘Rule 13. Indiscriminate attacks’.

- c) An attack 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.²¹

The IHL treaties also set out ground rules aimed at protecting civilians from the effects of hostile acts. These rules oblige the parties to armed conflict to respect the principles of distinction, proportionality, and precaution when attacking. The principle of distinction obliges the parties to an armed conflict to distinguish between civilians and combatants, between active combatants in the military and combat participants, and between civilian and military actors.²²

This important distinction is made possible in part by the rule that a party may only direct an attack against active combatants and military targets, not against civilians and civilian objects (unless and for as long as civilians are directly involved in hostilities).²³

The principle of proportionality implicitly recognizes that civilians and civilian objects may be incidentally affected by an attack against a legitimate military target. Thus under this rule, it is unlawful to conduct an attack 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 expected to be excessive in relation to the concrete and direct military advantage anticipated.²⁴

The principle of precautions includes two interrelated components, one concerning military operations and the other concerning attacks. First, in the conduct of military operations, IHL obliges parties to take constant care to spare the civilian population, civilians and civilian objects.²⁵ Second, IHL obliges parties to take several sets of precautions regarding specific attacks. In particular, the obligation to take precautions in attacks entails a requirement to:

- (a) do everything feasible to verify that the objectives to be attacked are neither civilians nor civilian objects, and are not subject to special protection but are military objectives;
- (b) take all feasible precautions in the choice of means and methods of attack to avoid, and in any event minimize, incidental loss of civilian life, injury to civilians and damage to civilian objects;

²¹ Additional Protocol I, Article 51(5)(b); and ICRC, Customary IHL Database, ‘Rule 14. Proportionality in attack’.

²² Additional Protocol I, Article 48;

²³ *Ibid*, articles 51(2) and 52(1)

²⁴ *Ibid*, Article 51(5)(b)

²⁵ *Ibid*, Article 57(1).

- (c) refrain from deciding to launch an attack if it may be expected to violate the principle of proportionality; and
- (d) cancel or suspend an attack if it becomes apparent that the objective is not a military one, that the objective is subject to special protection, or that the attack may be expected to violate the principle of proportionality.²⁶

IHL also places restrictions on how AWS may or may not be used in other contexts than the conduct of hostilities. These restrictions include rules that limit if and how an AWS can be used to guard and transport detainees, control crowds, and provide public safety in restricted territory under occupation.²⁷

c. The Martens Clause

As stated earlier, the Martens Clause is paramount in assessing the legitimacy of AWS because it states that under circumstances not covered by the IHL conventions, neither combatants nor civilians would be completely deprived of protection.²⁸ For the avoidance of doubt, the Martens Clause reads:

“Until a more complete code of the laws of war has been issued, the High Contracting Parties deem it expedient to declare that, in cases not included in the Regulations adopted by them, the inhabitants and the belligerents remain under the protection and the rule of the law of nations, as they result from the usages established among civilized peoples, from the laws of humanity and the dictates of public conscience.”²⁹

It is named after Fyodor Fyodorovich Martens, who first introduced the provision in the preamble to the 1899 Hague Convention (as a compromise in discussions of “treatment of fighters not accorded prisoner-of-war status”). The Martens provision, now understood as generally applicable, has gained the status of a customary rule and has been adopted, in whole or in part, by other IHL instruments.

²⁶*Ibid*, Article 57(2)(a) and (b);

²⁷ See e.g. ICRC, Customary IHL Database, rules 51, 75, 87, 123, 130.

²⁸Koutroulis, V., ‘Martens Clause’, Oxford Bibliographies, 24 July 2013.

²⁹CASSESE Antonio, “The Martens Clause: Half a Loaf or Simply Pie in the Sky?”, (2020) (11)1 *EJIL*, pp. 187-216.

The effect of this provision is to emphasize that in circumstances not covered by the IHL treaties, people affected by armed conflict will never find themselves completely unprotected. Instead, the behavior of the belligerents is still governed to a minimum by the principles of national law, and the dictates of public conscience.

Additional Protocol I to the 1949 Geneva Conventions provides enacts the same clause as follows:

“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 the dictates of public conscience.”³⁰

The nature, status and content of the Martens Terms may be subject to "major variation" in interpretations.³¹ Disagreement has arisen between states and experts as to whether it constitutes customary law, constitutes an independent source of law, or merely provides ethical guidance. This paper is inclined to submit that Martens Articles is more of an independent source of law which restates the obvious. National laws will always be available to protect civilians in situations where there are no adequate provisions under the rules of International Humanitarian Law. Thus, this paper pitches tent with the view that, at a minimum, "anything that is not expressly prohibited cannot be considered legal if it violates the principles" of the Martens Articles.³² At least from this point of view, the clause could be seen as implying positive obligations where a military action is contemplated to result in unsustainable humanitarian consequences.

Rules requiring legal reviews and advice

IHL requires states to carry out legal reviews of new weapons, means and methods of warfare and where necessary, make legal advisers available, to advise certain military commanders on the application of IHL and on the appropriate instruction to be given to the armed forces.

³⁰ Additional Protocol I, Article 1(2).

³¹ Cassese, A., “The Martens Clause: Half a loaf or simply pie in the sky?”(2000) 11(1), *European Journal of International Law*; Doswald-Beck, L., “International humanitarian law and the Advisory Opinion of the International Court of Justice on the legality of the threat or use of nuclear weapons”, (1997) (316) *International Review of the Red Cross*; and Ticehurst, R., “The Martens Clause and the Laws of Armed Conflict”, (1997) 317 *International Review of the Red Cross*.

³² CCW Convention, GGE LAWS, ‘A “compliance-based” approach to autonomous weapon systems’, Working paper submitted by Switzerland’, 10 Nov. 2017, p. 4.

a. The obligation to conduct legal reviews of new weapons, means and methods of warfare

States are under obligation to conduct legal reviews of new weapons and the means and method of warfare. For the avoidance of doubt, Additional Protocol I to the 1949 Geneva Conventions obliges state parties thus:

In the study, development, acquisition or adoption of a new weapon, means or method of warfare, a High Contracting Party is under an obligation to determine whether its employment would, in some or all circumstances, be prohibited by this Protocol or by any other rule of international law applicable to the High Contracting Party.³³

This obligation derives from the basic rule, set out in Article 35, that the right of states to choose means and methods of warfare is not unlimited and from the general legal principle mandating performance of that and other treaty obligations in good faith.³⁴

The question of whether the obligation to conduct legal reviews is part of customary international law and therefore is applicable to states that are not parties to Additional Protocol I remains debated.³⁵ However, it is regarded as good practice by most states, serving as an important measure to help ensure that a state's armed forces can and will conduct hostilities in accordance with its international obligations.³⁶

Article 36 does not provide concrete guidance on how legal reviews should be conducted. Nevertheless, it is commonly accepted that the scope of Article 36 is broad and could cover weapons of all types, regardless of lethality.³⁷ It also covers all new weapons, regardless of whether they are developed for further research and experimentation or procured 'off the shelf' from other states.³⁸ In terms of methodology, it is also accepted that although there cannot be a one-size-fits-all approach to legal reviews—since states have different needs, as well as different

³³ Additional Protocol I Article 36.

³⁴ Commentary of 1987 to Additional Protocol I, 'New weapons', Commentary on Article 36, para. 1466, p. 423.

³⁵Jevglevskaja, N., "Weapons review obligation under customary international law" (2018) (94)186, *International Law Studies*

³⁶ E.g. the USA first established a legal review mechanism in 1974, three years before the adoption of Additional Protocol I; see US Department of Defense, Directive 5000.01, 'The Defense Acquisition System', 9 Sep. 2020. As of 2021, however, relatively few states are known to regularly conduct legal reviews; see Boulanin, V. and Verbruggen, M., 'SIPRI compendium on Article 36 reviews', SIPRI Background Paper, Dec. 2017.

³⁷Boulanin and Verbruggen, *Ibid*

³⁸ ICRC *opcit*, pp. 9–10.

human and financial resources to conduct reviews— there can be elements of best practice.³⁹ These include conducting reviews as early as possible, using a multidisciplinary approach, relying on empirical evidence and, if possible, conducting independent testing to assess a weapon's performance and the risks associated with its use.

b. The obligation to provide legal advice

States have obligation to make available legal advisers so as to ensure that military commanders do not breach IHL rules even in the use of new technologies such as AWS. Article 82 of the Additional Protocol I to the 1949 Geneva Conventions requires the following in terms of legal advice:

The High Contracting Parties at all times, and the Parties to the conflict in time of armed conflict, shall ensure that legal advisers are available, when necessary, to advise military commanders at the appropriate level on the application of the Conventions and this Protocol and on the appropriate instruction to be given to the armed forces on this subject⁴⁰

The adoption of this article was prompted by the increasingly complex nature of IHL and the fact that some legal assessments could be difficult to make. Ensuring that legal advisers are available, when necessary, is a practical measure to help a state perform its obligation to respect and to ensure respect for IHL, which can be seen as flowing from the general principle mandating the performance of legal obligations in good faith.⁴¹ The material scope of the obligation is generally understood as having two requirements: (a) to have legal advisers available to provide training and educational materials on IHL for members of the armed forces; and (b) to dispense direct legal advice to commanders during the conduct of military operations.

Challenges of AWS

A major challenge of autonomous weapon systems is the difficulty of predicting their effects. From a humanitarian point of view, they pose the risk of harming civilians and increasing the risk of conflict escalation. From a legal perspective, they challenge the ability to comply with legal

³⁹ McClelland, J., “The review of weapons in accordance with Article 36 of Additional Protocol I” (2003)(85)850, *International Review of the Red Cross*, p. 414.

⁴⁰ Additional Protocol I, Article 82.

⁴¹ ICRC, Customary IHL Database, ‘Rule 141. Legal advisers for armed forces’.

obligations when planning an attack. From an ethical standpoint, this workflow threatens to replace human decisions about life and death with those of sensors, software, and machines.

Stuart Russell, a computer science professor at the University of California, Berkeley, said his concern with AWS is that he believes it is unethical and inhumane. The main problem with this system was that it was very difficult to distinguish between combatants and non-combatants.⁴²

Schmitt however does not agree with this viewpoint.⁴³ Even though he conceded that AWS can violate IHL, he opines that not all AWS may. Therefore, according to him, their lawfulness should be judged based on the peculiarity of each case. He forcefully argued that not every battle field has civilians or civilian objects. Thus, where battle field has no civilians, civilians will not be endangered by AWS.⁴⁴

With profound respect Schmitt's argument is neither here nor there. In his attempt to defend the lack of capacity of AWS to distinguished between civilians and combatants, he ended up being theoretical. He was making assumptions on possible absence of civilians in battle field without taking into consideration the corresponding possibility of having civilians at the battle field. Thus, this paper tends to pitch tent with Russell because his view point is more in tune with reality. After all, is better to err on the side of caution than to attack on assumption that civilians are absent in the battle field.

Furthermore, it is questionable how a robot can be effectively programmed to avoid civilian casualties when humans themselves lack the ability to make distinctions in today's inter-state conflict settings without clear boundaries between a variety of armed groups and civilians. Distinguishing an active combatant from a civilian or an injured or surrendering soldier requires more than advanced sensory and processing capabilities, and it would be extremely difficult for a robot to gauge human intention, based on the interpretation of subtle clues such as tone of voice or body language.⁴⁵

As the UN Special Rapporteur on extrajudicial, summary or arbitrary executions pointed out in his report to the Human Rights Council, the removal of humans from the selection and execution

⁴²Russell, Stuart "Take a stand on AI weapons". (2015) 521 *International Weekly Journal of Science*. 415

⁴³ Michael N. Schmitt, "Autonomous Weapon Systems and International Humanitarian Law: A Reply to the Critics" (2013) 4 *Harvard National Security Journal Features* 231

⁴⁴ *Ibid*

⁴⁵Reaching Critical Will, "Fully Autonomous Weapons" available at <https://www.reachingcriticalwill.org/images/documents/Resources/Factsheets/killer-robots-fact-sheet.pdf> accessed on April 23, 2022

of attacks on targets constitutes a critical moment in the new technology which is considered as “revolution in modern warfare”. He urged states to think carefully about the implications of such weapon systems, noting that such technology increases the risk that states are more likely to engage in armed conflicts due to a reduced possibility of military casualties.⁴⁶

Another challenge of AWS is that they are vulnerable to hacking and they could be used by non-State actors (cartels or individuals) against the State, other non-State actors, or civilians.⁴⁷ Identifying enemies that have become hors de combat could be challenged since it requires human judgment to determine whether the target was injured, needed medical treatment, or faked an injury.

Supporters of fully autonomous weapons also argue that these systems would help overcome human emotions such as panic, fear, or anger, which lead to mis-judgement and incorrect choices in stressful situations.⁴⁸ However, opponents to the development of these weapon systems point out that this so-called advantage can turn into a massive risk to people who live in repressive state systems⁴⁹. Fully autonomous weapons could be used to oppress opponents without fearing protest, conscientious objection, or insurgency within state security forces. The dehumanisation of targets would be matched by dehumanisation of attacks. Algorithms would create a perfect killing machine, stripped of the empathy, conscience, or emotion that might hold a human soldier back.⁵⁰ Finally, there are also widespread concerns about programming human bias into these machines. A machine could be biased programmed with the prejudice on the basis of race, sex, gender identity, sexual orientation, socioeconomic status, or ability.

Concluding remarks

The development and use of technologies in relation to AWS is not unregulated. Countries are required to respect and enforce the IHL rules that apply to AWS. These rules include specific and general prohibitions and restrictions on the use of AWS as a weapon, vehicle, and method of war. The rules also include obligations to conduct AWS legal reviews and provide legal advice,

⁴⁶*Ibid*

⁴⁷ *Ibid*

⁴⁸ Sharkey, Noel E. "The evitability of autonomous robot warfare" (2012) (94)886*International Review of the Red Cross*. 787–799

⁴⁹ *Ibid*

⁵⁰ *Ibid*

including guidance for the armed forces before and during armed conflict, involving AWS. Finally, states are required to take steps to address AWS-related IHL violations.

The challenges identified by this paper includes the fact that from a humanitarian point of view, AWS pose the risk of harming civilians and increasing the risk of conflict escalation; from a legal perspective, they challenge the ability to comply with legal obligations when planning an attack; and from an ethical standpoint, the system threatens to replace human decisions about life and death with those of sensors, software, and machines. Another challenge of the system is that it is very difficult for AWS to distinguish between combatants and non-combatants. AWS is vulnerable to hacking and it could be used by non-State actors (cartels or individuals) against the State, other non-State actors, or civilians. Identifying enemies that have become hors de combat could be challenged since it requires human judgment to determine whether the target is injured, needs medical treatment, or is faking an injury. Lastly, AWS could be used to oppress opponents without fearing protest, conscientious objection, or insurgency within state security forces.

In the light of the challenges of the AWS identified in this above, it is recommended as follows: states should internally prohibit the use of autonomous weapon systems target human beings. States should prohibit AWS that are designed or used in a manner such that their effects cannot be sufficiently understood, predicted and explained. Also, in order to protect civilians and civilian objects, states should uphold the rules of international humanitarian law and safeguard humanity; the design and use of autonomous weapon systems that would not be prohibited should be regulated by constraining them to objects that are military objectives and limiting the duration, geographical scope and scale of use of the said weapons.