

THE COMPLIANCE OF AUTONOMOUS WEAPONS TO INTERNATIONAL HUMANITARIAN
LAW: “QUESTION OF LAW AND QUESTION OF FACT”

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Info Artikel	Abstract
<p>Masuk:22/01/2022 Revisi:23/02/2022 Diterima:25/02/2022 Terbit:28/02/2022</p> <p>Keywords: International Humanitarian Law, Autonomous Weapons, Armed Conflicts</p>	<p><i>International Humanitarian Law (IHL) sets the rules to prevent human from doing excessive damages upon humanity in the time of war or armed conflicts. However, a new weapon which is called autonomous weapons rises a serious concern today because it can search, detect, identify, select, track and engage targets without human interventions. This study aims to clarify which weapons are regarded as “autonomous” today in order to find out whether the present autonomous weapons comply the IHL principles. This study adopts normative legal research. The data types used is based on secondary data which consist of Primary legal materials, namely the Geneva Convention 1949 and its Additional Protocols. In addition, secondary legal materials are used to support the primary legal materials are obtained from articles and books. The data is collected through library research and analyzed by using a qualitative-descriptive approach. It finds that a weapon system which limits human control and intervention, is not automatically classified as an autonomous weapon due to the level of human and AI engagement in the weapon. The use of autonomous weapon in armed conflicts does not entirely fulfill the principles of IHL, particularly a fully autonomous weapon because it will never satisfy the principle of distinction, proportionality, the prohibition of attack against those hors de combat and humanity.</i></p>
<p>Kata Kunci: Hukum Humaniter Internasional, Senjata Otonom, Konflik Bersenjata</p> <p>P-ISSN:1412-310x E-ISSN:2656-3797</p>	<p>Abstrak</p> <p>Hukum Humaniter Internasional (HHI) membuat aturan untuk mencegah manusia melakukan kerusakan berlebihan pada kemanusiaan pada saat perang atau konflik bersenjata. Namun, senjata baru yang disebut senjata otonom menjadi perhatian serius saat ini karena dapat mencari, mendeteksi, mengidentifikasi, memilih, melacak, dan melibatkan target tanpa campur tangan manusia. Penelitian ini bertujuan untuk mengklarifikasi senjata mana yang dianggap “otonom” saat ini untuk mengetahui apakah senjata otonom yang ada saat ini memenuhi prinsip-prinsip HHI. Penelitian ini mengadopsi penelitian hukum normatif. Jenis data yang digunakan</p>

berdasarkan data sekunder yang terdiri dari bahan hukum primer yaitu Konvensi Jenewa 1949 dan Protokol Tambahannya. Selain itu, bahan hukum sekunder digunakan untuk mendukung bahan hukum primer diperoleh dari artikel dan buku. Data dikumpulkan melalui penelitian kepustakaan dan dianalisis dengan menggunakan pendekatan kualitatif-deskriptif. Ditemukan bahwa sistem senjata yang membatasi kontrol dan intervensi manusia, tidak secara otomatis diklasifikasikan sebagai senjata otonom karena tingkat keterlibatan manusia dan AI dalam senjata tersebut. Penggunaan senjata otonom dalam konflik bersenjata tidak sepenuhnya memenuhi prinsip-prinsip HHI, khususnya senjata yang sepenuhnya otonom karena tidak akan pernah memenuhi prinsip perbedaan, proporsionalitas, larangan penyerangan terhadap hors de combat dan kemanusiaan.

INTRODUCTION

International Humanitarian Law (IHL) is a set of rules that seeks, for humanitarian reasons, to limit the effects of armed conflict. It protects persons who are not, or are no longer, participating in hostilities, and imposes limits on the means and methods of warfare. IHL is also known as the law of war or the law of armed conflict.¹ The set of rules included but not limited in the IHL consisted of the first, second, third and fourth Geneva Convention that were established in 1949 which consecutively rules the amelioration of wounded and sick in armed forces, amelioration of wounded and shipwrecked armed forces at the sea, treatment on prisoner of war and finally the protection of civilian in times of war. The 1949 Geneva Convention also comes with the 1977 protocol that protect victims of international armed conflicts (Additional Protocol I) and victims of non-international armed conflicts (Protocol II). The last protocol was established in on distinctive emblem (Protocol III). IHL sets the rules to prevent human from doing excessive damages upon humanity in the time of war or armed conflicts.²

The framework of IHL traditionally only regulates relationships between States, but the framework however has also been able to cover a broad range of subject, as IHL now also recognizes obligations for both States and non-State armed groups that are parties to an armed conflict.³ Table 1 shows the development of IHL.

Table 1. The Development of International Humanitarian Law

Timeline	Documents
1000 AD	Formation of initial humanitarian customs

¹ International Committee Of The Red Cross, "What is international humanitarian law?" ICRC, (31 December 2014), Pg. 1.

² United Nations decision to announce arms embargo and economic sanctions on the Federal Republic of Yugoslavia because of the excessive force used by government to destroy the terrorism act. United Nations Security Council Resolution 1160 (1998), point 8 Pg. 2.

³ *Ibid.*

	Formation of regional humanitarian customs (all over the world)
	Conclusion of treaties containing humanitarian clauses (Clauses on peace, armistice, capitulation)
1864	First Geneva Convention
1868	Declaration of St. Petersburg
1899	The Hague Conventions
1906	Review of the First Geneva Convention
1907	The Hague Conventions
1925	Geneva Protocol on chemical weapons
1929	First and Third Geneva Conventions
1949	1st, 2nd, 3rd and 4th Geneva Conventions
1954	Convention for the protection of cultural property
1977	Additional Protocols to the 1949 Geneva Conventions
1980	Convention on the use of conventional weapons
1993	Convention on chemical weapons
1995	Protocol relating to blinding laser weapons
1996	Revision of the 1980 Convention
1997	Convention on anti personnel mines (Ottawa Treaty)
1998	Adoption in Rome of the Statute of the International Criminal Court
1999	Protocol II to the 1954 Convention for the protection of cultural property
2000	Optional Protocol to the Convention on the Rights of the Child on the involvement of children in armed conflicts
2003	Protocol on explosive remnants of war (Prot V to the 1980 Convention)
2005	Protocol III to the 1949 Geneva Conventions, relating to the adoption of an additional distinctive emblem (the Red Crystal)
2008	Convention on cluster munitions

Sources : Antoine A. Bouvier (2012)⁴

Nowadays mankind is threatened by a new weapon called autonomous weapons, a system that can be installed into weapon and make the weapon itself become autonomous. This means that the weapon, after activation can select and attack the

⁴ Antoine A. Bouvier, "International Humanitarian Law and the Law of Armed Conflict" Peace Operations Training Institute, " Second edition, (December 2012), Pg. 17.

target by itself without the need of human intervention.⁵ Any kind of weapon with autonomy systems for the purpose of searching, detecting, identifying, selecting, tracking and engaging target without human intervention is called autonomous weapons.⁶ This study aims to clarify which weapons are regarded as “autonomous” today in order to find out whether the present autonomous weapons comply the IHL principles.

RESEARCH METHODS

This study adopts normative legal research which constitutes a process to find legal rules, principles and doctrines of the law to address legal issues at hand. Result of the study of law are the arguments, theory or new concept to resolve the faced problems.⁷ The data types used in this study is based on secondary data which consist of Primary legal materials (Written Rules), namely the Geneva Convention 1949 and its Additional Protocols. In addition, secondary legal materials are used to support the primary legal materials are obtained from articles, books and reports (Internet resources).⁸ The data is collected through library research and analyzed by using a qualitative-descriptive approach.⁹

DISCUSSIONS

1. Classifications of Autonomous Weapons

The installment of artificial intelligence (AI) into a weapon system which limits human control and intervention may be classified as an autonomous weapon. Yet, this approach may not be fully correct because a weapon is autonomous can be divided into 5 level as presented by Table 2. The Autonomy Level of Weapons.

Table 2. The Autonomy Level of Weapons

Autonomy Level	Autonomy Function				
	Sensing	Perceiving	Analysing	Planning	Decision
Level 5	System	System	System	System	System
Level 4	System	System	System	System	Shared
Level 3	System	System	System	Shared	Human
Level 2	System	System	Human	Human	Human
Level 1	Human	Human	Human	Human	Human

Sources : Hui Min Huang (2017)¹⁰

Table 2 shows that there are five levels of autonomy, and it is generalized as 4 big criteria for the autonomy in autonomous weapons. The first criteria is unmanned system found in autonomy level 1 and 2. The level 1 of autonomous weapons simply mean that the weapons have the autonomy of movement without direct touch of

⁵ Neil Davidson, “A legal perspective: Autonomous weapon systems under international humanitarian law” ICRC, (31 January 2018), Pg. 5.

⁶ Neil Davidson, “A legal perspective: Autonomous weapon systems under international humanitarian law” ICRC, (31 January 2018), Pg. 5.

⁷ Peter Mahmud Marzuki, “Penelitian Hukum” Jakarta Kencana, (2005), Pg. 35.

⁸ Soerjono Soekanto and Sri Mamuji, “Penelitian Hukum Normative Suatu Tinjauan Singkat” PT Raja Grafindo Persada, (2003). Pg. 13.

⁹ Zainuddin Ali, *Metode Penelitian Hukum*, Jakarta: Sinar Grafika (2016), Pg. 22.

¹⁰ Hui Min Huang, “Autonomy Levels For Unmanned Systems (ALFUS) Framework” NIST, (11 June 2017), Pg.64.

human (unmanned). This allows operators to directly control the autonomous weapons with a remote control but the sensing, perceiving, analysing, planning and decision making are carried out by human. In level 2, the autonomy of weapons is also in the scope of unmanned system, but the role of sensing and perceiving is already taken by the autonomous weapons, the human is only needed to analyse the data, planning and deciding the engagement of the weapons. In level 3 the autonomous movement of weapons is shared partly with human. In this regard, the weapons have the capability to sensing, perceiving and engagement at the target, whereas the human directing the weapons still have the controls in analysing and planning. The engagement are conducted by autonomous weapons but there is still a need for authorization by the human before the action is taken. In level 4, the weapons have the total control of sensing, perceiving, and analysing of the target. The planning is mostly conducted by the autonomous weapons, but the human can also decide the course for the weapons. The engagement is mostly conducted by the weapons with the restrictions of human capability to direct the system if something goes out of control. The fully autonomous weapons are found in level 5. At this level they are truly called autonomous weapons because all of the sensing, perceiving, analysing, planning and decision making are conducted by the weapons and human can only be interfering in a little scope of engagement, like redirecting the choice of target or turn off them in case of emergency.¹¹

2. The Compliance of Present Autonomous Weapons to the International Humanitarian Law Principles

Autonomous weapons are now a reality with their advancement in technology since they can make independent decision to their action, thus militaries have more opportunities to employ the military force with a very minimum risk for their personnel. It is assumed that in the future all wars will utilize the autonomous weapons. Yet, an ethical debate arises as to whether the autonomous weapon system shall be limited or banned completely. Although autonomous technology can be used for humanitarian purposes, there is no guarantee that these technologies would not be transferred from the noble use for humanitarian services to the use as military services in their entirety.

Currently, many kinds of autonomous weapons have been used by military. For example, RQ-1 Predator Drone (1994), Fully Operated Navstar Satellites and the Formal Uses of GPS to Guide Drone (1995), Samsung Techwin SGR-A1, a Fully Autonomous Sentry Gun Robots.¹²

Up to the present, there are still no specific rules for autonomous weapons. Hence, it is questioned whether the use of the weapons may be accepted under IHL which specifically regulates the limits on the means and methods of warfare in armed conflicts. It is submitted here that when the autonomous weapons are deployed in armed conflicts, the following principles of IHL must be fulfilled.

- a. **Principle of Distinction.** This principle states that there must be a clear distinction between civilians and combatants. The principle is stated

¹¹ *Ibid.*

¹² Ty McCormick, "LethalAutonomy: A Short History" <https://foreignpolicy.com/2014/01/24/lethal-autonomy-a-short-history/>, accessed 1 December 2021.

under Article 48 and 52 of Additional Protocol I. It provides that combatant and military objects that can be lawfully attacked according to this principle. Any kind of direct attacks that is targeted against a civilians or civilians' objects is not only a violation but also a grave breach of IHL, thus such direct attacks against civilians or civilians' objects are categorized as war crimes. Surprisingly, all current autonomous weapons fit with this principle. In other words, the condition of distinguishing between combatants and civilians is met by the specific usage under the development of autonomous weapons. For example, the current new generation of Harpy (2016) is an operational loitering attack weapon which is solely utilized as the Suppression of Enemy Air Defence Mission by discovering the enemy radar signal. In this regard, the Harpy sensor would never misinterpret the radar signal from civilians in a controlled condition. This is because humans do not emit signal naturally and there would be no civilians' property in the area of military air defence in normal occurrence.¹³ The only misinterpretation that can occur if there is a system malfunction or the operator failure to recognize the distinction itself, such as in the case of the 1988 Iran Air Flight when the Aegis Air Defence System aboard the USS Vincennes stationed in the Persian Gulf during the Iran-Iraq War shot down the Iranian commercial airline, killing all 290 people aboard. The operator failed to comprehend the data that the Aegis system already gave to the stationed personnel, resulting to an increased identification status of the Iran Air Flight 655 to F-14 Tomcat, which is a fighter airplane, as the result the USS Vincennes decision was to shoot down the commercial plane.

- b. **Principle of Precaution.** This is an obligation for all the states to take all the feasible precautions to avoid or minimize the incidental losses of civilian life, injury to civilian and damage to civilian objects. It is ruled under Article 57 of Additional Protocol I that states the needs to ascertain the target of attack is a combatant or military object. If at any moment the target becomes apparent as non military objects then the attacks shall be cancelled or suspended immediately. This principle can be easily achieved by implementing the necessary upgrade to the autonomous weapon like in the Arena Protection system which can detect slow moving object like human and high-speed missiles that must be destroyed on sight in a controlled condition.¹⁴
- c. **Principle of Proportionality.** The principle limits and protects any potential harm to civilians by demanding the least amount of harm caused to them and when the harm must be really occurred upon the civilians, the damage needs to be proportional to the military advantage. This principle is ruled under Article 51(5) (b) of Additional Protocol I

¹³ Lelouche Nataniel, *et al.*, "iCLEAN - Loitering Attack UCAV" Technion Institute of Technology, (2012), Pg. 20.

¹⁴ Marine Corps Warfighting Publications, "MAGTF Anti Armor Operations," Chapter 2, Marines, (2 August 2016), Pg. 7.

concerning that the conduct of hostilities which prohibit attacks when the civilian harm would be excessive in relation to the military advantage sought. Hence, a direct attack against any civilian who is not taking part in any hostilities is a direct violation of IHL. The principle of proportionality is only applied when the attack is made against a lawful military target. In a controlled condition, autonomous weapons would be unlikely to target anything except of the military targets, thus the damages would be expected to be in a proportionate scope of the target. For example, the use of Brimstone that has a Tandem Shaped Charge warhead that employs a smaller initial charge designed to initiate reactive armor, followed by a larger more destructive charge designed to penetrate and defeat the base armor, the small blast area minimizes the damage to be only around the target.¹⁵

- d. **The Notion of Necessity.** This is a principle for military armed forces to give them the authority to cause harm and destruction via engaging in combat. The concept of military necessity acknowledges that under the laws of war, winning the war or battle is a legitimate consideration. IHL limits this principle as Article 52 of Additional Protocol I provides a clear list of a subject of lawful attack, namely military objects. Autonomous weapons face this real problem. This is because the development of autonomous weapon is built around the use of controlled condition. Controlled condition means a situation when the parties, personnel, war tools and facilities are all lawful targets under IHL. In the controlled condition, it is to be expected that all the components in the area is consisted of only combatants and military targets. However, not all armed conflicts occur in the controlled condition. For example, the incident of the Iran Commercial Air flight (Flight 655) that kill 290 civilians on board when it was flying over the Persian Gulf during the Iran-Iraq war. The failure of the operator and Aegis system to distinguish a commercial air plane from a fighter airplane resulted in the stationed USS Vincennes decision was to shoot down the plane.¹⁶
- e. **The Prohibition of Attack Against Hors De Combat.** The prohibition to attack any person who is hors de combat (those who are sick, wounded and a prisoners of war) is a fundamental rule under IHL as it is constituted under Article 41 of Additional Protocol I. Soldiers can be targeted lawfully under normal circumstances, but if they surrender or get wounded and no longer pose a threat then it is prohibited to attack them. Additionally, they are entitled to extensive protections if they meet the criteria of being Prisoners of War under Article 13 of the third Geneva Convention. It states that a Prisoner of War must at all times be humanely treated. Any unlawful act or omission by the country, under

¹⁵ Vincent Boulanin and Maaïke Verbruggen, "Mapping The Development Of Autonomy In Weapon Systems" Researchgate, (November 2017), Pg. 48.

¹⁶ Gillian Brockell, Wahington Post, January 9, 2020 "Iran's president reminded the world that the U.S. mistakenly shot down an airliner. Now, Iran is suspected of doing the same", <https://www.washingtonpost.com/history/2020/01/06/iran-air-flight-irans-president-invokes-tragedy-many-americans-have-forgotten/>, accessed 1 December 2021.

whose captivity, the Prisoner of War is in, which leads to death or seriously endangers the health of a prisoner of war in its custody is prohibited. The violation of this principle can be found in the use of SGR-A1 by South Korea.¹⁷ This is because the weapons cannot discern anyone (a combatant or hors de combat) who comes into the sight of SGR-A1. This means when Hors de Combat that is detected by the SGR-A1, he/she could be the target if he/she failed to make a signature of surrender that could be perceived by the weapon. In this regard, even if the operator tried to stop the autonomous weapon engagement, it would be too late to stop it from killing or decapitating the hors de combat person.

- f. **The Prohibition on the Infliction of Unnecessary Suffering.** Even if harm and destruction is permissible under the principle of necessity, IHL prohibits unnecessary suffering and superfluous injury. This means that even if a combatant can be lawfully attacked, IHL still prohibits the attack to cause any unnecessary damages to him/her. This rule can be found on the Protocol Relating to Blinding Laser Weapons in 1995, the Protocol explicitly prohibits the use of blinding laser weapon. This rule is not related to autonomous weapons. Yet, the failure to abide it results in the violation of the principle of precaution. In this regard, the commander or the state requesting the manufacture of autonomous weapon with a blinding laser ability (Lethal Autonomous Weapon) is guilty under IHL.¹⁸
- g. **Principle of Humanity.** This principle means that any human is capable to show respect and care for others, even the enemy. Article 3 of Geneva Convention provides a detailed treatment for a person in relation to the respect of humanity. Human who fears to be convicted as war crimes will naturally abide this principle, but that is not the case for a robot. A human operator has the right to exercise the principle of precaution as if the target is apparent to be unlawful target. The human can decide to stop the attack regardless the target survivability. However, when it comes to a fully autonomous weapon, a human does not have any chance to do anything as the weapon engages the target instantly upon its sight. A fully autonomous weapon does not have the capability to discern the target, especially to differentiate hors de combat from a combatant. It cannot also distinguish a religious building from a military building. This raises a concern because a fully autonomous weapon can not discriminate its target, thus the existence of civilian is no value when it attacks the target.

CONCLUSIONS

Although artificial intelligence (AI) is inserted into a weapon system which

¹⁷ Global Security.Org, Samsung Techwin SGR-A1 Sentry Guard Robot, <https://www.globalsecurity.org/military/world/rok/sgr-a1.htm>, accessed 1 December 2021.

¹⁸ Human Rights Watch, "Precedent for Preemption: The Ban on Blinding Lasers as a Model for a Killer Robots Prohibition", <https://reliefweb.int/report/world/precedent-preemption-ban-blinding-lasers-model-killer-robots-prohibition>, accessed 1 December 2021.

limits human control and intervention, it is not automatically classified as an autonomous weapon due to the level of human and AI engagement in the weapon. It becomes fully autonomous weapons when all of the sensing, perceiving, analysing, planning and decision making are conducted by the weapons and human can only be interfering in a little scope of engagement, like redirecting the choice of target or turn off them in case of emergency.

The use of autonomous weapon in armed conflicts does not entirely fulfill the principles of IHL. The use of autonomous weapon in a controlled condition may satisfy the principle of precaution and the prohibition on the infliction of unnecessary suffering. It can also satisfy the principle of distinction and principle of proportionality, depending on the level of autonomy of the autonomous weapons. However, it does not satisfy the principle of the prohibition of attack against those hors de combat and principle of humanity because it is not able to discern those hors de combat and those that should be spared in an attack. The use of a fully autonomous weapon when engaging in armed conflict and in an uncontrolled situation will never satisfy the principle of distinction, proportionality, the prohibition of attack against those hors de combat and humanity.

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