

APPLICATIONS OF ARTIFICIAL INTELLIGENCE UNDER INTERNATIONAL HUMANITARIAN LAW

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Abstract

As increasingly sophisticated weaponry reaches the field of battle, people are becoming increasingly isolated from the conflict. We already live in a world where a man sitting in a room can direct and carry out target-killing operations using robotic weapons on the opposite side of the globe. In this aspect, the advancement of weaponry technology has kept people off the battlefield, and the next step—artificial intelligence (AI) weapons—may do the same by removing people from decision-making. The use of AI technologies and techniques in warfare is growing quickly. This presented difficult difficulties to society, academics, lawmakers, military planners, and inventors. The development of AI weapons is already bolstering the armed markets; they are no longer the stuff of science fiction. Some nations have made significant progress in developing autonomous and machine learning systems from personnel systems, such as Israel's Iron Dome, which can stop approaching missiles autonomously and more quickly than a human could. President Putin stated to Russian students on September 8, 2017, that "artificial intelligence is the future, not only for Russia but for all of humankind." Whoever assumes control of this arena will also assume control of the entire planet.

An international discussion about whether and how such autonomous and machine learning weapons systems can conform with the standards of international humanitarian and customary law is being sparked by the development of AI weapons and technologies. The main issues in this paper are whether such autonomous weapons systems are effectively under human control, whether they can adhere to the fundamental principles of humanitarian law, such as distinction, proportionality, and the protection of civilians, what the nature of such armed conflict will be, and who will be held accountable for any mistakes. Finding the answers to those questions is the goal of this endeavour. The goal of this research is to briefly investigate the nature and character of warfare with AI weapons before outlining the significance and evolution of AI weapons. This study finishes by outlining the responsibilities under international humanitarian law that states may consider as part of their evaluations of weapons utilizing AI-related technologies.

Keywords: Artificial Intelligence, Machine Learning, Deep Learning, Drones, Robots, Armed Conflict, International Humanitarian Law.

1. INTRODUCTION

1.1 Contemporary Understanding in Respect of AI Weapons

Autonomous Lethal Weapons (LAWS). Numerous writers on this issue combine the phrases "autonomous" and "weapons system" in various ways, for examples- *Autonomous Weapon Systems (AWS)*, *Lethal Unmanned Weapons (ULW)*, and *Assassinating Autonomous Robots (LAR)*. Robots that can kill themselves (AKR)¹. Artificial intelligence (AI) weapons are the general word they use to refer to all different types of weapons. One must first grasp what AI weapons are in order to engage in any legal or policy debates. True, there isn't currently a widely accepted or approved definition of artificial intelligence. According to the understanding, it would be beneficial to comprehend the specifics of AI weapons if it concentrates on methods and instruments that are developed from or connected to AI.²

It is crucial to comprehend the system's framework first. The frame comes in two different varieties: *an automated system* and *an autonomous system*.

An automated system is one that functions similarly to a rules-based system for computer-based reasons. The system's output will always be the same for each information because the scientists fixed

¹ Robert Sparrow, Killer robots, 24 J. applied phi. 1, 67 (2007).

² Dustin A. Lewis, Legal reviews of weapons, means and methods of warfare involving artificial intelligence: 16 elements to consider, Humanitarian Law & Policy Blog (Mar. 21, 2019), <https://blogs.icrc.org/law-and-policy/2019/03/21/legal-reviews-weapons-means-methods-warfare-artificial-intelligence-16-elements-consider>.

certain input and output in this order using coding, therefore it is unable to determine output on its own.

An autonomous system is one that is not dependent on a particular output; instead, it makes assumptions based on the information provided by its sensors and then may produce a different result. A system like those functions like human intellect. As stated by Missy Cummings:

Human intelligence typically follows a pattern known as the perception-cognition-action information processing loop, in which people notice something in their environment, consider their options, and finally decide to act. A computer is built to perceive the environment, evaluate the information using optimization and verification algorithms, and then choose an action in a manner akin to a person. This is what artificial intelligence (AI) does. To put it simply, AI is machine intelligence based on computer systems that can carry out tasks and making decisions similarly to human intellect. There is no legal definition of AI weapons; neither international agreements nor national laws describe these autonomous weapons. The US Department of Defense's (DoD) definition of AWS from 2013 is still the most frequently quoted term. *Autonomous Weapon Systems (AWS)* is a system that, once triggered, may choose and engage a target without additional human involvement, according to the DoD. This concept is deficient since it does not distinguish between weapons systems that are autonomous and automated.³

2. AI Weapons and Nature and Character of War

The intense, clash of political and ideological mottos is the essence of conflict.⁴ In his book *On War*, Carl von Clausewitz stated that "war is an act of force to compel our enemy to do our will." So, it is crucial to understand the core character of conflict that it is a dynamic interplay of human wills. However, the fundamental purpose of conflict has always been to pit opposing wills against one another. According to Sir Basil H. Liddell Hart in his book *Strategy*, "the chief incalculable in war is the human will". However, the character of conflict was different. Law, culture, ethics, technology, and other factors that change across time and space have an impact on the nature and character of war. Artificial intelligence (AI) has the potential to significantly alter combat with its recent advancements. Both the nature and the character of a conflict define what it is and how it is waged. Numerous experts contend that AI has the power to fundamentally alter the way in which war is fought and transcend the limitations of the way in which it is now fought. They claim that this is because AI-controlled wars will be fought with autonomous weapons that can engage any target without human intervention.⁵

A. AI AND CHARACTER OF WAR

In an interview about the nature of war, US Chief of Military Staff Gen. Mark Milley stated that "the nature of war, however, gets to how you fight, with what weapons you fight, what terrain you fight on, the doctrine you fight with, how you do leader development, how you organise yourselves to fight." The nature of conflict is drastically shifting.

In February 2018, US Defense Minister Jim Mattis remarked that "war's character evolves constantly. It adapts to adapt to its period, the technology, and the environment, earning it the nickname "Chameleon" from a long-dead German. With time, the nature of battle evolves. The equipment and procedures that are used by the military to wage war affect combat, specifically.

Arguments on whether AI weapons may alter the nature of war are being made, not whether warfare is evolving or not. These arguments centre on human intervention and AI weapons. The use of AI in warfare, according to one argument, will move to the new macro dimension of conflict. Autonomous

³ Missy Cummings, Artificial intelligence and the future of warfare, *Cha. Hou. for the Roy. Ins. of Int. Aff.*, 4 (2017).

⁴ Thomas Nagel, *War and massacre*, 1 *Phi. and P. A.*, 123 – 44 (1972).

⁵ Bernard L. Brown, *The Proportionality Principle in the Humanitarian Law of Warfare: Recent Efforts at Codification*, 10 *Cornell Int. L. J.* 134, 136 (1976);

systems have the potential, like the combustion engine, to fundamentally alter the nature of warfare. Like how the development of the combustion engine accelerated previously, such autonomous weapons can improve the speed at which nations can engage in combat. Another side counters that such autonomous weapons systems are not currently in use. Even if AI weapons exist in the future, humans will still directly intervene if these weapons are used. The unmanned aerial vehicle is one of our system's most incorrectly called weapons, according to US Defense Minister Jim Mattis. Although there may not be anyone in the cockpit, it is being flown by someone. Over their shoulder, someone is watching. Despite some recent rapid advancements in AI, it might not be at that point for military applications until 2060 or 2070. However, it shouldn't prevent militaries from utilising some of AI's potential applications or from tackling crucial issues with force modernization, such as network capacity and battle system integration.⁶

B. AI AND NATURE OF WAR:

The way that war is fought now has changed since the start of history. It is one of the main forces behind changes in how society and states are organised. The emergence of AI weapons and other comparable technological advancements are radically altering the nature of battle today. It even has an impact on the structure of a world order, the balance of power, and the very nature of the state. Some academics contend that the equipment and techniques utilised occasionally modify the nature of war, although some others are dubious about that. There are thus two schools of thought: one maintains that the character of war is not changing, while the other contends that the massive advancements in artificial intelligence are undoubtedly altering the essence of conflict. The experts who hold the view that the nature of war does not change as technology advances contend that this rigid essence is defined by the nature of war, which is to say that the characteristics of war are ferocious, interactive, and largely political. Without any of these fundamentals, there won't be a conflict; there will be something else. The war cannot be changed by technology, therefore.⁷

No amount of technology will alter the character of battle, as James M. Dubik noted. War continues to be a matter of the human heart and a reflection of who we are as people. Unfortunately, war is a common aspect of human interaction. We are not destined to fight forever, without a doubt. People make decisions to either decrease or increase the probability of conflicts.

Another school of thought contends that due to the quick advancement of modern technology, war will change in character. The development of AI and other technology is altering society as a whole, as well as how war is fought and how the world is organised. Few people would contest the idea that technological advancements will transform the nature of battle. However, those arguments were founded on several limited areas, similar to the tale of the blind man and the elephant. Numerous commentators view the various sections, each attempting to explain what they perceive. That is not ideal; it must consider the elephant as a whole.

Technology, according to Dr. Peter Layton, "has profoundly transformed the character of war." AI has the capacity to engage targets on its own, which could result in a new type of conflict. If so, a new aspect of the evolving nature of battle will come into play.

However, AI weapons are not yet sufficiently advanced to change the essence of conflict. But things are transforming quickly. Despite greatest efforts, no state is completely equipped to manage the next AWS conflict.⁸

3. AI Weapons and The Obligations Under International Humanitarian Law

Two fundamental goals have guided the development of international humanitarian law: protecting civilians from becoming military targets and shielding armed forces from needless and gruesome

⁶ *Ibid.*

⁷ *Ibid.*

⁸ *Id.*

suffering. To achieve these core goals of IHL and to prohibit or otherwise restrict types of weaponry and combat tactics, there exist numerous treaties and treaty provisions. those clauses, often known as "means and methods of warfare." IHL has established guidelines to restrict these strategies and tools of war. Every new weapon must abide by the principles and rules of IHL and other applicable international laws; otherwise, using such weapons in armed conflict will be against the law.⁹

3.1 Compliance with the Martin Clause:

Although there are no regulations addressing AI weapons in IHL or other international laws at this time, it is undeniable that any new weapons must adhere to the fundamental principles and guidelines of IHL.

According to this viewpoint, the Martin clause provides a moral connection between IHL and new weapons systems, stating that if any new weapons system is not covered by any existing treaties or treaty provisions, civilians and combatants continue to be protected by the moral standards of humanity and the public conscience. The provision was created based on a statement made by Professor von Martens at the Hague Peace Conferences in 1899.

First, it added language to the 1899 Hague Convention's preamble (II). Later, it was repeated in all the Geneva Conventions (GC I: Art. 63; GC II: Art. 62; GC III: Art. 142; GC IV: Art. 158) as well as the Additional Protocols (AP I: Art. 1; AP II: preamble), albeit the exact terms were somewhat altered. It focusses on the phrase from Article 1(2) of AP I: Civilians and combatants remain subject to the protection and control of the rules of international law derived from accepted custom, from the principles of humanity, and from the demands of public conscience in situations not covered by this Protocol or by other international accords. The way this clause should be interpreted raises a legal quandary. It is consequently open to different interpretations, which can generally be divided into three categories. The most restrictive interpretation of this article, which states that customary international laws will continue to apply after the ratification of treaty rule, has traditionally been preferred by the powerful States. Diverse academics subscribe to a more modest view, according to which the article can only provide guidance in interpreting other treaty terms and not impose concrete restrictions. Most experts agree with the widely held notion that any kind of combat that is not expressly prohibited by international humanitarian law must be judged against the minimum standards of humanity and public morality. It also establishes the key tenet that anything that is not expressly forbidden is yet implicitly acceptable if it abides with human rights laws and public morality. The rapid advancements in AI and autonomous weapons systems could effectively replace human decision-making on the battlefield with autonomous machines, leaving life-or-death decisions to the nonhuman. The Martens clause states that future weapon systems must adhere to moral standards and the wishes of the general population. The general moral standards that uphold respect for another person's life and dignity are referred to as the "principles of humanity." AI weapons that are not effectively controlled by humans would fail this test.¹⁰

3.2 Compliance with the Principles of Distinction, Proportionality, and Precautions: As was previously mentioned, the major goals of international humanitarian law have been to protect civilians from becoming military targets and to shield armies from needless and harsh suffering. Although it is permissible to attack military equipment, such acts must not be pointless and cruel. The goals are somewhat incongruous. This course has developed the principles of difference, proportionality, and precautions, which mirror the rigidity of these opposing goal lines.¹¹

⁹ *Ibid.*

¹⁰ *Id.*

¹¹ Jean-Marie Henckaerts & Louise Doswald-Beck, *Customary international humanitarian law*, Rule 14 (Vol. 1. Cambridge University Press, 2005).

A. The principles of Distinction:

According to the principle of distinction, participants in an armed conflict must always distinguish between civilians and combatants, as well as between civilian objects and military targets, and as a result, they must only direct their operations against these objectives.

It signifies that it is forbidden to utilise indiscriminate means and methods of combat as well as to attack indiscriminately. This principle is regarded as both a fundamental tenet of international humanitarian law and customary international law. This principle made very clear-cut guidelines for the protection of civilians by restricting military strikes to military objectives alone, and it expressly has application to AI weapons. Weapons powered by artificial intelligence (AI) must be able to distinguish between civilian and military targets using an a priori, abstract manner. According to IHL regulations, if there is any uncertainty as to whether a given object is military or civilian, the latter is assumed. AI weapons must be developed to end missions in such situations. When civilians directly participate in hostilities, the decision becomes considerably more challenging. Choosing the appropriate targets in this kind of situation is exceedingly difficult for a human to do. It would appear that AI weapons' quantitative data analysis is insufficient. As a result, there are several instances where qualitative and highly contextualized analysis is required rather than quantitative data for distinction analysis. AI weapons are considered legal under the distinction principle if they can determine targets in accordance with the rules.¹²

B. The principle of proportionality:

The principle of proportionality was also defined for the protection of civilians, much as the principle of distinction. It indicates that the military's tactics of assault should balance deterrence of severe civilian fatalities or damage with proportionate military goals. For instance, a military attack cannot be proportionate if there is no initial military necessity.

However, Articles 51 and 57¹³ of Additional Protocol I emulate this idea, which is based on international customary law.

Article 51(5)(b) specifically stated that:¹⁴

The following attacks, among others, should be regarded as indiscriminate: —

(b) an attack that may be anticipated to result in incidental civilian casualties, civilian injuries, civilian property damage, or a combination of these, which would be excessive in comparison to the anticipated tangible and direct military advantage.

To adhere to this criterion, AI weapons must be able to estimate the likely number of significant civilian casualties from an attack. AI weapons must evaluate civilian casualties in relation to potential military benefits under the principle of proportionality. Such measurements largely rely on contextual information rather than quantitative data. Due to this, the compliance of AI weaponry presents this concept with possibly much greater issues than the distinction principle.

C. The precautionary principle:

The precautionary principle is a guideline of customary international law and is also codified for the protection of civilians in Article 57 of Additional Protocol I. Do everything within your power to ensure that the targets of your attack are not citizens or civilian property, are not the subject of special protection, and are instead military targets, according to Article 57(2)(a)(i).¹⁵ Parties to the war must therefore take all reasonable precautions to protect civilians and civilian property during the attack. The phrase "anything feasible" refers to the challenging requirements that AI weapons must meet in order to uphold this objective. The responsibility to take all reasonable precautions to prevent any

¹² AP I, Art. 51(5)(b)

¹³ AP I, Art 57(2)(a)(ii).

¹⁴ *Ibid.*

¹⁵ AP I, Art. 57(2)(a)(i).

civilian casualties is one such difficulty. If there is a chance that AI weapons won't be able to protect civilian objects in such a situation and another weapon system might likely hit the target without harming civilians, then utilizing AI weapons will be against this concept. There is disagreement on this topic, but many academics feel that it is impossible to say that the AI weapons system is illegal in and of itself based on the aforementioned criteria. The evaluation ought to be based on the various contexts. However, even if AI weapons are not explicitly forbidden, they may still be banned in certain situations on the battlefield.¹⁶

3.3 LEGAL REVIEW OF AI WEAPONS:¹⁷

Under IHL, a state's ability to choose its weaponry is limited. However, as was already mentioned, this does not mean that a country can introduce any new types of weapons into its battlefield without first considering their legality, as all new weapons must be subject to legal scrutiny under Article 36¹⁸ of Additional Protocol I and customary IHL. In Article 36, it is stated that: "*A High Contracting Party is required to ascertain whether the use of a new weapon, means, or method of warfare would be, in some or all circumstances, prohibited by this Protocol or by any other rule of international law applicable to the High Contracting Party before studying, developing, acquiring, or adopting it.*". States are required to conduct legal studies of new weapons to make sure that they can uphold all obligations under AP I and other international rules in all scenarios of combat. The ability of AI weapons to keep their unique appearances in accordance with the fundamental principles of IHL, as well as other treaty and customary regulations, will determine whether or not they are legal. These have clauses in them that are meant to shield soldiers from needless pain and suffering as well as civilians from military targets. IHL makes no assumptions about how to conduct such a legal review. According to a literal interpretation of Article 35¹⁹ and 36, the military is required to employ new weapons in light of the commitments set forth by Additional Protocol I and other international law. The predictability and dependability of such weapons, which, if activated, can retain all the duties under IHL, including the principle of distinction, proportionality, precaution, humanity, and other treaty obligations, are crucial for the legal examination of AI weapons.²⁰

3.4 MEANINGFUL HUMAN CONTROL:²¹

Does the philosophical question "Will robots decide on the life and death of human beings?" determine whether artificial intelligence weapons are morally acceptable? Once triggered, the fully autonomous AI weapons may select and engage a target without human assistance. The International Committee of the Red Cross (ICRC) stated in its statement at the first meeting of the Group of Governmental Experts on Lethal Autonomous Weapons Systems²² that "compliance with legal obligations would require that combatants retain a minimum level of human control over the use of weapon systems to carry out attacks in armed conflict".²³ AI weapons must be effectively controlled

¹⁶ *Supra*, note 10.

¹⁷ International Committee of the Red Cross Geneva, A guide to the legal review of new weapons, means and methods of warfare: measures to implement Article 36 of Additional Protocol I of 1977, 88 I. R. of the Red Cross 864, 933 (2006), https://www.icrc.org/en/download/file/20143/icrc_864_11.pdf

¹⁸ AP I, Art. 36.

¹⁹ AP I, Art. 35.

²⁰ *Ibid.*

²¹ Convention on Certain Conventional Weapons (CCW) Group of Governmental Experts on Lethal Autonomous Weapons Systems, Statement of the International Committee of the Red Cross (ICRC) (2017), [https://unog.ch/80256EDD006B8954/\(httpAssets\)/7E2777BB078B1F8CC12582490037288D/\\$.](https://unog.ch/80256EDD006B8954/(httpAssets)/7E2777BB078B1F8CC12582490037288D/$.)

²² Michael N. Schmitt & Jeffrey S. Thurnher, Out of the loop: autonomous weapon systems and the law of armed conflict. 4 Harv. Nat'l Sec. J. 231 (2012),

https://heinonline.org/holcgin/get_pdf.cgi?handle=hein.journals/harvardnsj4§ion=8; Kenneth Anderson & Matthew C. Waxman,

²³ Jean-Marie Henckaerts & Louise Doswald-Beck, *Supra*, Rule 70 to 86.

by humans in order to adhere to legal requirements. To adhere to legal requirements, Autonomous weapons must be effectively controlled by humans. IHL establishes standards for dealing with human subjects; in times of conflict, these standards must be followed, and violators must be held accountable. It follows that for the AI weapon system to adhere to those criteria; some level of human interaction is required.

3.5 RESPONSIBILITY FOR VIOLENCE:²⁴

When AI weapons violate the law, who will be held responsible? Between engineers, soldiers, commanders and the weapon itself, there is a spectrum. Operators operate it, and commanders guide them, while AI developers built the programming and guided the weapons as to when, how, and against whom to attack. Therefore, there is a problem with accountability. In the case of non-autonomous weapons, operators and commanders are held accountable for any acts of violence since they choose targets, but in an AI system, the weapons independently select targets based on pre-programmed codes. On the battlefield, the creators don't employ weaponry. The circle of responsibility is therefore not active.

Someone should be held accountable for the choice to take another person's life, according to the fundamental law of war and the nominal veneration of the opposing parties to the fight. Failure to do so will be a breach of the Martine Clause-guaranteed principle of humanity. Likewise, at the very least, their families have a right to know who is responsible for their deaths and why, how, and by whom. Another crucial requirement of IHL is that someone be held accountable for every death brought on by a war. A state may be held responsible for any infringement committed with the use of AI weapons under international law of state accountability. As a rule of international law, the state is responsible for any wrongdoing, including violations of human rights.

4. CONCLUSION:

IHL regulations state that states do not have an unrestricted right to choose the means and methods of warfare, and that each state must first conduct a legal review to determine whether a particular weapon satisfies all requirements of international law and IHL before using it or even developing a new weapon. Although there are currently no regulations governing AI weapons, these weapons cannot absolve themselves of IHL requirements.

AI weapons should be able to uphold the principles of humanity and the public conscience, in addition to the purposes of IHL and the obligations regarding the distinctions between civilians and military personnel. They should also be proportionate in their treatment of civilian casualties and military requirements. AI weapons cannot satisfy IHL requirements and goals without effective human intervention and control since, in some cases, they may need to analyze contextual, quantitative, and qualitative data to choose particular legitimate targets.

Thus, meaningful human intervention is required for AI to uphold its IHL commitments. Although there are currently no specific laws governing the legality of AI weapons, we can draw the conclusion from the legal arguments that if AI weapons can meet those requirements, then using AI weapons in armed conflict will be legal, and if AI weapons cannot, then using AI weapons will be illegal.

However, there are moral objections to a machine having the authority to determine whether a person lives or dies. By putting some level of human oversight on AI weapons, this problem can be resolved. States should now start negotiating with one another to decide what level of human intervention is necessary to satisfy moral and legal requirements.

5. SUGGESTIONS:

²⁴ Stephen D. Goose & Mary Wareham, The Growing International Movement Against Killer Robots, 37 Harvard I. R. 4, 32 (2016).

Data Analysis for Early Warning Systems: Artificial Intelligence (AI) can be used to identify possible conflict zones or humanitarian disasters by analysing massive volumes of data from multiple sources, including social media, satellite images, and news reports. AI-powered early warning systems can facilitate prompt action and the avoidance of IHL violations.

Monitoring and Compliance: AI-driven technologies are able to track and examine events in conflict areas, such as the movements of armed groups, the eviction of residents, and assaults on infrastructure used by the civilian population. The protection of people and civilian property is one of the IHL standards that this monitoring can help to ensure is followed.

Legal study and Analysis: Artificial Intelligence can help legal professionals with the study and analysis of complicated legal texts, such as IHL-related treaties, conventions, and case law. Algorithms for natural language processing (NLP) can swiftly extract pertinent data and offer insights to aid in legal decision-making.

Training and Education: AI-driven educational resources can be created to teach legal professionals, military personnel, and aid workers about the fundamentals and procedures of international humanitarian law. To improve comprehension and adherence to IHL standards, these technologies can make use of interactive simulations, case studies, and personalized learning algorithms.

Predictive analytics for conflict resolution: AI systems can examine past conflict data, which includes variables like political dynamics, economic situations, and demography, in order to anticipate possible points of tension and pinpoint conflict resolution tactics. AI can help prevent violations of International Humanitarian Law by tackling the underlying causes of wars.

There is potential to increase the efficacy, efficiency, and accountability of humanitarian activities by incorporating AI technologies into various IHL components. This could ultimately result in improved protection of people and respect for human dignity in crisis zones.

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