P-ISSN: 2790-6795	Annals of Human and Social Sciences	July-September 2025,Vol. 6, No. 3
O-ISSN:2790-6809	http://doi.org/10.35484/ahss.2025(6-III)14	[167-183]

Annals of Human and Social Sciences
www.ahss.org.pk

RESEARCH PAPER

AI, Autonomous Weapons, and the Crisis in International Humanitarian Law

Erum Iftikhar

Lecturer, School of Law, University, of Karachi, Karachi, Sindh, Pakistan

Corresponding Author erum.iftikhar@uok.edu.pk

ABSTRACT

This paper elaborates critically on how the Artificial Intelligence (AI) and autonomous weapon systems (AWS) are fundamentally challenging the International Humanitarian Law (IHL). The recent developments of AI in the Military also prompt legal and ethical challenges in IHL. Autonomous weapon systems (AWS) are designed in a way that enables them to select the targets they intend to attack and carry this out without the interference or control of a human being. The study regarding AWS and IHL produce a qualitative critical review of the pertinent literature, the legal frameworks, and policy documents. AI/AWS, by their natures, violate the principles of distinction, proportionality and precaution of IHL because of their inabilities to mirror human intuition, sentiment, and awareness. This leaves a serious accountability gap resulting in weak individual accountability over IHL offenders. The review determines that operational legal frameworks are strained and requires a new legally binding instrument to achieve appropriate human control and respect of human dignity in armed conflict. The paper appeals to strengthened and new forms of international binding instrument to ensure that there is substantial human control of AWS, and also demands global cooperation.

Keywords: Artificial Intelligence (AI), Autonomous weapon systems (AWS), International Humanitarian Law (IHL), Martens Clause, Cyber and Information Warfare

Introduction

The nature of armed conflict in the modern era has undergone a significant transformation with the integration of AI on the battlefield (Bousquet, 2022). This development reflects a profound shift in both the means and methods of warfare and increasingly exerts pressure on the established normative framework of IHL. The field of artificial intelligence (AI) is gaining ground in military practice, changing the very essence of the nature of contemporary conflicts. Such integration automates the functions of operating the hardware to the full-fledged cyber, and information warfare, and is a major paradigm shift in military research and application. The AI and machine learning algorithms are capable of swiftly and effectively computing huge volumes of combat information such as satellite images, sensor activity, and intelligence reports (A. Khan, Jhanjhi, Omar, Hamid, & Abdulhabeb, 2025; Raska & Bitzinger, 2023). This improved data processing helps the defense personnel to decide faster and more accurate as it gives strategic insights in real-time which would have been otherwise difficult to interpret manually.

The most important factor in this new era of military is the advent of autonomous weapon systems (AWS) (Shahid & Jamil, 2024). The International Committee of the Red Cross (ICRC) states that AWS can be construed as any weapon system having autonomy in its most critical functions pertaining to those that can be used to select and engage targets without any humans being involved after it is deployed (Oringa, 2024). This general definition can be applied to a variety of current weapon systems and offers a basic knowledge base regarding the understanding of the legal and ethical implications of the given technologies. The rise in autonomy of weapon systems implies the necessity of reconsidering the methods and practices of military activity and its regulation by

international law. By changing the means of decision-making, namely the shift of a human-centric attitude to possibly machine-centric processes of carrying out critical activities, including target selection and engagement, it significantly changes the operational context. The implication of this transformation is that the current legal structures, that have been created to support the more traditional mode of operation, will surely begin to show severe stress and possibly insufficiency. This shift in foundations will recurrently be brought to the fore as the fundamental reason of the so-called crisis in International Humanitarian Law (IHL), and not simply as a technological development, putting into perspective why IHL, as it currently exists, is practically failing to keep up with the conditions of AI-powered warfare (Bonea, 2025).

Incorporating autonomous operations in military affairs has strong benefits. It enables greater speed in the performance of the military tasks, can improve decision-making, allows analyzing large amounts of data quickly, and exposes human soldiers to significantly less risk, as it can perform dangerous tasks. AI-enabled technologies can enhance military logistics, and efficiently manage supply chain processes and strengthen cybersecurity measures, as its capabilities are in early detection and neutralization of threats. Military strategists find these operating advantages very appealing where they hope to achieve a decisive advantage in conflict (Chukwu et al., 2024).

Nevertheless, as the proliferation of AWS increases the risks are significant especially where international humanitarian law is concerned. Limited human control over lethal decisions presents considerable risks, including, any breach or violation of international humanitarian law" (Jafariandehkordi, 2024). Principles of IHL, such as distinction, proportionality, and precautions in attack, were carefully designed to allow human decision-makers to execute those requirements, basing them on human judgment, moral decision-making, and empathy (Glasgow & Fraczek, 2024). What is worrying is that the obligations and responsibility of IHL cannot be outsourced to systems and machines. IHL rules apply to human combatants who have the responsibility of respecting these rules and should face any undoing of these rules. It can be safely said that law holds undisputable human control and command of use of force. The development of AWS therefore presents a question or rather leads to questions that are of urgency to the extent of ethical and legal application of IHL in future warfare, especially that the ethical repercussions of IHL delegation to machines are immense. The implied contradiction of the situation is that the most desirable qualities in AWS, making them attractive for the military, namely, their autonomy and rapidness, are also incompatible with the premises of IHL, requiring human judgment and value-conscious action (Bonea, 2025; Glasgow & Fraczek, 2024). This is a primacy of values conflict that cannot be easily handled by some adjustments of the law or interpretation of the law. It is not just an issue of interpretation and the discussion carried out in the rest of this paper will highlight that this is a matter of fundamentals: philosophical and practical, at the core of present-day warfare and that, as such, the so-called crisis in IHL is acute, and something that will need more than incremental solutions.

Literature Review

The methodology of the qualitative critical review that the paper follows consists in using only the existing academic, legal, and policy literature to investigate the issues concerning artificial intelligence and autonomous weapons systems in the context of the international humanitarian law (IHL). Surveyed literature is diverse and ranges between legal treaties, expert commentaries, scholarly research, UN resolutions and international advocacy reports. The present body of work presents important knowledge connected with the operational, ethical, and legal difficulties which AWS presents concerning the IHL principles of distinction, proportionality, and precaution. Integrating these views, the review finds the primary points of agreement, new regulatory initiatives, and conflicting issues that require the dramatic clarification of legal norms and protection.

AI in Modern Warfare and Autonomous Systems

Lethal Autonomous Weapon Systems (LAWS)

Numerous states actively work on the development or deployment of AI-enabled weapons, which means that lethal autonomous weapon systems (LAWS) are no longer a hypothetical device: they are already entering the battlefield. Recent assessments claim there are a minimum of 17 systems with any degree of autonomous targeting. More powerful military forces, such as the USA, China, Russia, Israel, South Korea, and the United Kingdom are very much investing and developing various types of autonomous weapons systems (Bhatt & Bharadwaj, 2024; Hiebert, 2024; Human Rights Watch, 2020; Perrin & Masoud, 2025).

These systems include multiple platforms designed to work in different spheres. Surveillance, reconnaissance, and precision strikes are possible with unmanned aerial vehicles (UAVs) like combat drones like the MQ-1 Predator, MQ-9 Reaper, and Bayraktar TB2, some of which may be flown without direct human intervention (Kunertova, 2025). Unmanned ground vehicles (UGVs) The UGVs are being developed in services as mine sensors, explosive disposal and combat support and armed models are arming up to enter hostile areas. The use of unmanned maritime systems (USVs) and unmanned underwater vehicles (UUVs) is also in consideration in mine clearance, patrolling, and low cost missile carrier stations (GRIGORAŞ & PETRE, 2025).

Some notable examples of LAWS are loitering munitions, commonly known as suicide drones or kamikaze drones (including the ZALA Lancet and HESA Shahed 136 that can hang around a place and autonomously strike targets) (Ibrahim & Shuja, 2024; Sankaran, 2024). Examples of autonomous targeting in defense are automated anti-mine/IED robots and next-generation air-defense systems as the US Phalanx CIWS, the Iron Dome (Israel), and the Super aEgis II machine gun (South Korea) (Dodge, 2024).

The working reality of such systems is not hard to see. In 2020, it was claimed that a Kargu 2 drone identified and struck a human being, making it possible that the same may have been the first moment an autonomous killer robot had pitted lethal weaponry against human beings (Bode & Nadibaidze, 2024). In the same vein, Israel is claimed to have launched an AI assisted combat drone swarm attack in Gaza in May 2021 (Pérez Herrera, 2024). These examples highlight that LAWS are not a threat of the future but a threat that occurs here and now and continues to develop. The subtle difference between the automatic systems, which work based on the preprogrammed activity within the strict frames, and autonomous systems, which might be able to act independently of human control on the dynamic field and might be able to learn and develop, is essential to the current implications of IHL. Such fact requires both policy and law enforcement that can be done only immediately because the technology is present, and it is gaining momentum very fast.

Cyber and Information Warfare

The role of AI also reaches non-kinetic warfare such as cyber and information warfare. These are emerging areas and issues that are of concern to the international humanitarian law especially about their implication on civilians.

As used in cyber warfare, AI runs automated malware and advanced cyber-attack software capable of locating and exploiting vulnerabilities without human interference. AI-created malware is able to adapt and become better automatically, imitating other actual threat actors and using high-end obfuscation processes in order to go undetected. Even AI could be heavily used to find new zero-day vulnerabilities and be used to exploit much faster. This feature brings doubts regarding the predictability and traceability of cyber-

attacks, which makes it problematic to apply the principles of IHL (Guembe et al., 2022; Sauer, 2016).

Machine learning algorithms are widely applied in the context of information war to generate and spread disinformation in an attempt to subjugate the population and destabilize society. Algorithms behind the AI-based social engineering attacks are used to find optimal targets, create believable avatars and formulate highly individualized messages or even deepfakes (artificial intelligence-created video, image, or audio files) to influence human actions and accomplish malicious goals, including obtaining access to privileged information or systems. Chatbots may further facilitate the real-time interaction phases of phishing attacks by being artificially intelligent bots that are virtually indistinguishable to humans to allow such attacks to occur on a large scale (Finlayson & Islam, 2025; Mouratidis, Kanavos, & Kermanidis, 2025).

Similar IHL concerns arise with new domains like Digital Autonomous Weapon Platforms but these "digital autonomous weapons" operate in new domains. The human costs of cyber-attacks on critical civilian infrastructure have a high potential of widespread and indiscriminate civilian effect. Moreover, its tendency might be that the effects of algorithmic bias in information operations would disproportionately affect some demographic groups and might even be discriminatory. Use of AI further extends the battlefield to where it is physically impossible to fight, this inherently complicates the application of IHL that is limited to physical geographic sites. The fact that AI technology is dual-use, with civilian AI systems being readily converted to military, further erases boundaries between what is military, and what is civilian infrastructure, making it harder to place controls on them, and even leaving more opportunity to unintentionally maim civilians in the process. This would require a wider re-consideration of the relevance of IHL to the non-kinetic impacts, difficulties in attribution in Cyber warfare and the necessity of an overarching regulation of the various sectors of technology (Human Rights Watch, 2025; Qiao-Franco & Javadi, 2024).

Intelligence, Surveillance and Reconnaissance (ISR)

Artificial intelligence systems have changed the Future of Intelligence, Surveillance, and Reconnaissance (ISR) activities by improving the analysis of data and decision making power to a considerable extent. Surveillance/Targeting network and algorithms can monitor targets, evaluate trends and even order a pre-approved strike to give militaries real-time data and situation awareness. As an example, the U.S. Department of Defense Project Maven has been using machine learning to simultaneously process drone video streams at high speed, in order to rapidly label possible threats and eliminate the cognitive strain on the human operator as well as speed the rate of analysis (Hogue, 2021). Brainstorming through innumerable amounts of drone imagery, AI can recognize combatants or forecast away group movements and provide exhaustive information on aggressor placement and patterns. Facial recognition systems with the use of AI are also used at the military bases and in high-security zones to control access and conduct long-term surveillance operations (Mehta & Ahmed Abdulalim, 2025; Perrin, 2025).

These AI systems can help, and even automatically make judgment calls on the battlefield, and upend conventional human-centric chains of command. Although it is tempting to portray them as simply decision-support, the fast calculation and pattern matching ability of AI can in effect pre-determine or heavily influence the targeting decision, substantially limiting the potential to exercise any meaningful human judgment when a strike is ordered. This not only moves the human in the loop out of the decision making process but into a state of monitoring or simply vouching for recommendations made by machines leaving the pre-selections and pre-screening processes as a human on the loop or human out of the loop situation altogether. This is a delicate loss of human control and responsibility even where there is still a human at the end of the trigger who pulled it, an

aspect that draws attention to a challenging field in which the principle of precautions in attack needs more attention than ever: IHL requires that constant care and re-evaluating are used in this field (Rešlová, 2023).

Core Principles of International Humanitarian Law

Distinction

The concept of distinction is a central pillar of the international humanitarian law (IHL). It brings a nearly unconditional duty on combatants in a war conflict that to all times, a distinction should be made between: the civilian population, the combatants and between civilian objects and military objectives (G. A. Khan, 2024). The operations must be confined only to the combatants and lawful military targets, but should never be limited to the civilians and civilian property. This is the rule that automatically bans indiscriminate bombardment as well as use of any means or methods of warfare that can never make this all-important distinction between those who take part in hostilities, and those who do not. The commanders have a duty to ensure that such distinction can be met in practice through the use of weapons and tactics used. The very essence of the protective role of IHL (in the case of civilians) is undermined, in case autonomous weapon systems cannot fulfill or have inherent problems with this principle. This means that the crisis does not only concern whether certain rules can be applied but rather the viability and usefulness of the most basic principles of IHL in an AI conflict that could easily result in the untold suffering of a massive number of civilians and the absolute unacceptability of these armed conflicts as it applies to International Law.

Proportionality

The principle of proportionality is an important restriction on the culpability of hostilities, even when an attack is carried out on a legitimate military target. It prescribes that an attack is not to be expected to produce incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, beyond that which is permitted hereby noting that such loss, injury, or damage will be excessive in relation to the concrete and direct military advantage anticipated. Article 51(5)(b) of Additional Protocol I stipulates this rule and is a well-known rule of customary international law (Ahmad, Rahim, & Aziz, 2024). The evaluation of proportionality is commonly recognized as one of the most challenging norms that could be used in IHL because it is complex and situation-specific. It needs an analysis of the human values that is sensitive and balances many times incomparable values of civilian life and property against expected military benefit. This is both qualitative moral decision and it also requires the use of discretion and it cannot be distilled down to mere quick sensor readings or algorithmic involvements. This judgment needs the human element further highlighted by the legal standard used by the courts, that of a reasonable military commander. This definition suggests a human ability to experience, moral orientation and a sense of being able to put values on scales and employ discretions. The idea, that this standard can be applied to the algorithm, which acts solely within the frames of the preconceived logic, is a fiction of the law. No AI would be able to do this prior calculation qualitative moral weighing and the indwelling "choice-making space" that constitutes the sum and substance of proportionality would be beyond its capability even if it could calculate the odds of a harm. This indicates that putting current IHL into practice when applied to AWS could spell out a redefinition of what constitutes reasonableness in the most basic sense canceling out the protective nature of the law (Ahmad et al., 2024).

Precautions

Applicable principle of precautions in attack also requires parties involved in an armed conflict to take all possible measures to ensure that harm is not inflicted to civilians and civilian objects. This involves a variety of anticipatory steps: ensuring that targets are

bona fide military objectives, selecting means and methods of attack that would impose the least significant risk to civilians where a choice can be made (e.g. the most accurate weapons), and, wherever possible, providing reliable advance warnings to the civilians of an upcoming attack. More importantly, IHL demands that the attacker ought to call off or postpone an attack when it is clear that the intended target is no longer a military target or in case attack would lead to the principle of proportionality. This responsibility imposes the need to reconsider the altering situation in real time on the battlefield and the continuous concern to avoid hurting the civilian population. Defenders have a part to play as well, like the passive measures to secure their own civilian population and properties against the consequences of an attack, like not placing military objects in highly populated places. The participation in "feasible steps," "constant care," and "real-time re-evaluation" process suggests ongoing human mental exercise of observation, estimation, and ability to make changes at any moment without compromising hostilities. This is one of the areas of conflict related to self-governing mechanisms, given that, although they have the capacity to process very promptly, their functionality is anchored to pre-set parameters (Al-Fatlawi, Tamimi, & Al-Tamimi, 2024; Mouratidi, 2024).

Martens Clause

In addition to the particular codified regulations contained in the treaties, the Martens Clause is an important ethical and legal starting point in IHL. First mentioned in the preamble of the 1899 Hague Convention II and recalled in Article 1(2) of Additional Protocol I, it provides that "[i]n the event of cases not regulated by the law in force the human person is brought under the shield of the principles of humanity and the imperative of the consciences of peoples" (Shanks-Dumont, 2025). This clause prevents the assumption that anything not explicitly prohibited by treaty is automatically permitted, ensuring that new means and methods of warfare are always measured against broader ethical considerations.

The Martens Clause cannot be omitted in consideration of the topic of morality and human dignity. It represents a concept of the notion that the means and the method of the war are not absolute and the lowest level of humanity has to be maintained. The question of choice to treat somber human choices to machine decision makers brings questions of human dignity and humanity in executing violence and human killing (Nadaradjane, 2022). It is morally objectionable and politically unacceptable that machines might decide who gets to live--and die--on its own. It implies that even in case AWS were technically supposed to adhere to the codified IHL, they would still contravene the intention of the Martens Clause of undermining human moral agency, empathy, and dignity in armed conflict, never to cross a certain moral boundary line. This underscores the fact that what lies within the confines of the law may be overshadowed by the limits that an ethical concern may require (Nadaradjane, 2022).

Accountability

Accountability is also another major pillar of IHL which makes people and states accountable to what they do during armed conflicts. The IHL is directly focused on human operators and human commanders, to whom legal obligations apply in terms of planning, selecting and executing the attacks. The entire framework of IHL was based on the thought that human beings have to be the ultimate decision-makers regarding the forceful use. In current IHL, robot weapons cannot be accused of criminality; the legislation requires them to be commanded and controlled by human operators. Accountability is not only about punishment but also about deterring future censoriousness of IHL, providing justice and redress against victims, fostering respect of IHL and human rights, and is also a source of peace and stability in post-conflict settings. In the wake of its history of development, accountability systems of the Nuremberg Trials to present international criminal tribunals and courts affirm the concept of personal accountability to international crimes and command responsibility. The fundamental question is that IHL accountability cannot just be

about blame allocation, it is a tremendously important tool of prevention of future violations and justice for the victims. When accountability is made confounded, challenging, or pulverized because of the intricacy of AWS and dispersion of duty to various designers, programmers, and operators, then it not only directly sabotages IHL implementations operations but also has a deterrence effect (Egeland, 2016).

Results and Discussion

This section is discussed in detail below in two sections, one for challenges posed by autonomous weapons to IHL, and Legal and policy frameworks aimed at minimizing the effects of these challenges posed by LAWS and AI.

Autonomous Weapons VS IHL: Compliance and Challenges

The addition of autonomous weapon systems to military action is posing critical issues to fundamental assumptions of International Humanitarian Law. Such obstacles are related to the nature of the differences between rational human decision-making and algorithmic decision-making, which may result in possible lack of compliance and crisis in law enforcement.

Distinction Challenges

The principle of distinction requires the separation of combatants and civilians, military targets and civilian targets, and gives significant challenges with AWS. According to studies, fully autonomous weapons have been seen to be in a position to fail to abide by this basic requirement (Human Rights Watch, 2025). Under real conditions, AWS simply do not have the refined situational awareness of human understanding to make such important decisions. They could be unable to notice human behavior cues like recognizing combatants from other men without uniform, differentiating between a surrendering combatant and an active threat, or judging the intentions of people in a complicated environment. This gap exposes misidentification of a potential target, resulting in unintentional harm on civilians.

Urban warfare and irregular combat, which are characteristic of the modern conflicts add to this problem. When blurred, as in such settings, it is much less clear whether a civilian is a civic or combatant soldier, and in these cases a degree of human judgment and interpretation of the moral questions needs to be applied, which robots cannot very easily emulate. The issue of distinction in case of AWS is deeper than just technical recognition (e.g., visual recognition of objects) (Güneysu, 2024). It also consists essentially in situational insight, in making decisions about intent and in making sense of complicated human behaviors. This involves a contextual intuition, empathy and moral judgment that AI does not have. Even data and processing resources could not adequately replace the inherently human ability to decipher the complex, ambiguous and rapidly evolving contexts of battlefield settings, and hence compromise full compliance with IHL is exceptionally problematic and invites grave concerns that full autonomy systems may undertake indiscriminate attacks.

Proportionality Challenges

Principle of proportionality, which states that civilian damage should not be disproportionate to the expected military utility, is specifically hard to implement by autonomous systems (Martin, 2025). According to experts of the ICRC, such norm as proportionality is one of the most problematic to apply in practice because it requires subtle human value judgment. The abstract values like civilian lives against the military gain cannot be taken into consideration by the autonomous systems which operate based on the programmed algorithms. Although such systems may have quick input on sensors, they

cannot do the human moral reasoning, empathy, or discretionary choice that is inseparable to such judgment (Martin, 2025; Shany & Shereshevsky, 2025).

Impossible legal standard of a reasonable military commander, as applied by the courts, cannot be reproduced by AWS. This criterion is entrenched with human judgment, experience and that moral compass can permit consideration of competing values and exercise judgment. It is a legal fiction to attribute this standard to a computerized algorithm, which runs on some predefined logic. Experts arrive to the conclusion that AWS are unlikely to meet the proportionality test during dynamic and unpredictable, combat scenarios because they cannot undertake the qualitative moral balancing, and the operational space wherein choice is made, upon which the test of proportionality is based. This poses very fundamental concerns to whether this is ever going to be fully and ethically automated and this may erode the protective nature of the law (Human Rights Watch, 2025; Shany & Shereshevsky, 2025).

Precautions and Control

Autonomous systems drastically undermine effective precautions in attack which involve constant attention and the capacity to adapt to any unexpected situations. When an AWS is deployed and used over a broad area, with long persistence, without an accompanying human operator to manage it, the weapon can be lost to the commanders in terms of where it actually is, and what it is engaged by. Such lack of control implies that commanders will not be able to suspend or abort an attack upon news of new information development such as those in the following cases: When civilians enter the anticipated strike zone or the target is no longer legitimate (Stockholm International Peace Research Institute, 2020).

It can also cause some unpredictability related to AWS operation that can then focus on the compliance with IHL since the actions performed by the system could not reflect original human intentions or even could not take into consideration developing situations in the battlefield. Implication in the precautionary principle of the words feasible steps, standard of care, and real time re-evaluation of the changing conditions presume that there is constant use of the human cognition, not only observation and assessment but also the ability to immediately adapt and/or stop the hostilities. This stands out as a serious conflict with autonomous systems, as much as they may be able to process things very fast, they still do so according to pre-written parameters. The attendant advantages in operationally autonomy (ex. speed, range, operation in communication-denied environments) are paid directly to the human ability to provide real-time oversight and intervention prompting a sharp conflict with IHL precautionary requirements and potentially generating a higher risk to unintended government-caused harm to civilians (Diakonia International Humanitarian Law Centre, 2023; IHL Centre, 2025; Szpak, 2024).

Accountability Dilemmas

One of the major issues with AWS is that there will be a loophole where there is an accountability gap in case IHL is not adhered to. The key responsibility of the traditional IHL is placed on human operators (and commanders) as its representatives and the parties that are directly accountable in front of the law. But when it comes to AWS, it becomes dark and unclear where to load blame of individual crimes. The software programmer(s), manufacturers, commanders or operators may be involved, but attribution is too convoluted and obscure due to autonomous code and decision making procedures (Church, 2021; Human Rights Watch, 2025).

Although States will continue to have strict liability regarding an unlawful act by their troops, since they are not granted with the ability to transfer IHL liabilities to robots, the undermining of individual criminal responsibility is largely perceived as a crisis to the

implementation of IHL. This compartmentalization of the chain of responsibility, involving a complicated network of operators, including those involved in the design and programming, manufacturing, deployment, and operation of software, is intrinsically problematic to the classic IHL model according to which clear chain of command and individual responsibility of violations are applied. When no individual man can obviously be criminally liable to revenge against the unlawful acts of an AWS, this dilutes both the severity of this IHL penalty as well as the capacity of victims to repayment and put justice. Such dilemma may amount to de facto impunity towards AWS abuses of IHL, making the whole system of international criminal justice in armed conflicts ineffective, causing breach of trust in the system of the international criminal law, and leaving victims without practical redress (Church, 2021; Human Rights Watch, 2025).

Human Control Imperative

The general opinion, expressed by the commentators and the states, is that AWS should be utilized in such a way that does not eliminate the human decision-making and judgment concerning the use of force. The idea of meaningful human control (MHC) has been brought as one of the main tenets of the LAWS regulation debate. MHC will secure a significant human element in the monitoring and management of the activities of AWS to ascertain that a certain level of accountability and standards of IHL have been met (Perrin, 2025; Zamani, 2025).

When the issue of autonomy in weapon system is a hindrance to human legal judgment as the issues of distinction, proportionality, and precautions have shown, then the system will be questioned in relation to IHL. Level of automation and the form human control takes are therefore very crucial in determining whether AWS can be compliant with IHL or not. Although MHC is admittedly a crucial requirement, it is still very controversial and hard to define and operationalize. Proceeded aspects regarding MHC are that it shall provide adequate information to human operators, it should allow exercising of judgment, the capability to constrain the challenges that it could undertake, constriction, to redefine the aims and interrupt suspend the machine. The opposition is the difficulty to apply these conceptually defined principles to understandable, enforceable and consistently applicable standards that can be applied within the broad spectrum of autonomous systems, like munitions compared with platform-based systems. This is because this ambiguity presents a formidable obstacle to effective regulating and which ensures the compliance to IHL (Perrin, 2025; Zamani, 2025).

Legal and Policy Frameworks

Several attempts have been undertaken by the international community to deal with the dilemmas of AI and autonomous weapons, yet an exhaustive and obligatory framework has not been established.

Geneva Conventions & AP I

International humanitarian law is largely based on the four Geneva Conventions (GC I, GC II, GC III and GC IV) of 1949 and their Additional Protocols, especially the Additional Protocol I (AP I) (Islam, 2018). The law is to be respected and also ensured that there is respect as articulated in common article 1. Whereas there are no specific references to AWS in these fundamental treaties, there is no doubt that all parties are obligated to use the already existing IHL provisions to new weapons.

The main rules in relation to the conduct of hostilities that are further explained in Additional Protocol I are the following: distinction (Articles. 48, 51, 52), proportionality (Article 51(5)(b)), precautions in attack (Art. 57) (Islam, 2018). The most important duty under Article 36 of AP I obligates States to do prior review that the new weapon, means or

method of warfare is lawful, and then adopt it. This evaluation determines whether the use of weapon would be restricted by IHL in certain scenarios or absolutely. The Martens Clause (AP I, Art. 1(2)) in addition asserts that even new weapons should be judged against the dictates of the public conscience and the principles of humanity acting as a true global moral standard (Asaro, 2016). This provision discourages the idea that everything that is not called out is allowed, thus handling new possibilities and ways of war (Asaro, 2016).

Convention on Certain Conventional Weapons (CCW)

Following the 2016 CCW resolutions, a Group of Governmental Experts (GGE) on Lethal Autonomous Weapon Systems (LAWS) is composed internally by the Convention on Certain Conventional Weapons (CCW), a framework treaty under the Geneva Conventions (Chengeta, 2022). In 2019, the GGE was able to agree on 11 guiding principles including the confirmation that IHL fully applies to AWS and that states should not lose human responsibility over AWS lifecycle. These principles also emphasize the fact that there is no lawful use of weapon systems, including LAWS, whose effects cannot be constrained in adherence with IHL or otherwise be not applied in such a way as to comply with IHL.

The GGE is also writing down possible regulatory aspects in a so-called "rolling text". Nevertheless, it is difficult to reach an agreement on binding commitments. Although the CCW offers a platform of discussions, its consensus based model has been criticized as yielding slow progress. The CCW has nevertheless traditionally provided an avenue to ban weapons before they are actually used, e.g. blinding laser weapons.

UN Resolutions and Initiatives

AWS have been gaining an increasing attention of the United Nations General Assembly (UNGA). In December 2023, UNGA Resolution 78/241 was passed by a huge majority (152 votes, in favor), including the affirmation that IHL applies to LAWS and requesting the perspectives of member states to influence a subsequent decision. It is the initial resolution regarding autonomous weapons systems in UN General Assembly and establishes a certain agenda item on Lethal autonomous weapons systems in further sessions. The UN Human Rights Council Resolution also issued warnings of the humanitarian risks associated with AI including bias and discrimination, and urged states' due diligence standards on AI systems in 2022. In October 2023, the United Nations Secretary-General, Antonio Guterres and the President of the ICRC, Mirjana Spoljaric, jointly called on a new and legally binding instrument on AWS and asked that negotiations end by the year 2026 (Perrin, 2025). This request underscores the necessity in certain prohibitions and limitations in order to protect future generations against the aftermaths of AWS usage. Moreover, the ICRC has also adopted a so-called Global Initiative, whose aim is to spread awareness of IHL in contemporary conflict and, to this effect, AI and autonomy in particular.

Other Frameworks

Although a specific killer robot convention is still lacking now, there are other international regimes that cover the matter to some degree. Potentially, the Arms Trade Treaty (ATT) might help to control cross-border transfer of AWS since it establishes demands on rejecting exports of arms due to the evaluation of risks (Altamimi, 2022). Some aspects of international human rights law, including the International Covenant on Civil and Political Rights (ICCPR), can be extraterritorial in armed conflict, and can provide supplementary guidance on the protection of such rights as the right to life or the right to human dignity (Ali & Ramamurthy, 2025). Export control systems, including the Wassenaar Arrangement also contribute to the demise of the propagation of dual-use technologies that may include AI-related parts, which might be applied in AWS (Brockmann, 2022). Other non-governmental organizations like the "Campaign to Stop Killer Robots" are raising

awareness and campaigning towards an international legally binding ban on development, production and use of a fully autonomous weapons before it happens (Samen, 2024).

Conclusion

Artificial Intelligence (AI) integration into the military actors and, specifically, autonomous weapons (AWS) is a huge shift in the modern-day warfare process, which exposes major vulnerabilities and gaps in the International Humanitarian Law (IHL) system. Although AI has strong military potential reasons linked to improvement of speed, efficiency, and minimal risk to human soldiers, it is also posing a great threat to the basic operations of IHL, which are distinguished, proportionality, precaution, and accountability. The conclusion restates this drastic change and explains why it poses such serious vulnerabilities further driving the main point in this work that AI/AWS is not just an incremental shift but a paradigm shift that poorly prepares the current IHL to handle this change.

The fact that IHL is by nature grounded on human intuition, ethical subjectivity, and immediate awareness of the situation on the ground, is inherently negated by self-regulating, machine-based systems. This poses a major accountability lapse which makes it hard to attribute responsibility or raises deep fears of compromised human dignity in the matter of armed conflict. This focus on the human dignity being eroded supersedes the legal details with a fundamental ethical issue, which is consistent with the broader spirit of the Martens Clause of focusing more on the high-mindedness of humanitarianism, that, even when more detailed legal compliance can be achieved, the moral price to pay may not be worth it.

The accelerated progression of technical processes clearly exceeds the lagging rate at which laws are established, and the international community has a compelling case to act drastically before it is too late. The IHL crisis is severe and needs more than just piecemeal solutions to ensure technology only supplements rather dramatically undercut the rules of war that we all recognize. This final admonition to an immediate and firm action and that which is done on a greater scale than merely incremental solutions acts as a conduit to the recommendations, enhancing the persuasive purpose of the paper and pointing to the urgency with which the problem needs to be addressed, warning that non-action comes with serious humanitarian consequences.

Recommendations

In order to deal with this crisis and to make sure that technology, instead of undermining the rules of war, is used in such a way that it serves them, the following recommendations are essential:

Two-Tier Regulatory Strategy

A large number of experts recommend a two-tier system as an instrument of managing autonomous weapon systems. This would require:

- Prohibition: Prohibiting AWS in law that either cannot or otherwise cannot comply with IHL or those that attack human beings without any meaningful protection in human control. This would involve proper prohibitions such as those in the Chemical Weapons Convention (CWC) or the Convention on Certain Conventional Weapons (CCW) of the most unsafe and morally unacceptable weapons, i.e., fully autonomous lethal platforms without adequate supervision by humans.
- Strict Regulation: Having a strict regulation on all the other autonomous systems. At the heart of both levels should lie the undying need of actual human oversight of both

targeting and engagement actions. Such a regulation should provide strict parameters on what can be targeted, how long, how geographically dispersed and to what extent as well as make it possible that human operators can shut down systems after they are activated.

Enhance IHL Adherence

According to Additional Protocol I to the Geneva Conventions, states are obliged to review strongly and to strengthen their Article 36 reviews of any newly utilized AI-enabled weapon. These reviews must entail openness of AI functioning, high testing criteria, and safeguards to guarantee predictability and reliability. Interpretations ought to be led by the Martens Clause and other IHL provisions with any ambiguity in the context of AWS refusing to support objections to the protection of civilians and the maintenance of a so-called principle of humanity. According to 2023 UNGA resolution and ICRC appeals, current IHL might not be enough to cover AWS usage, and thus it is necessary to negotiate the new legally binding rules or protocol to make the application of IHL to AWS clearer and more robust. This needs to be iterative and multi-disciplinary, and best practice will be shared between states.

Ethical Safeguards

The specific plans to limit the usage and development of AWS ought to be characterized by ethical restrictions within the national policies and military doctrines. This encompasses prohibiting the so-called hit-and-run attacks by robotic devices in civilian zones and requires a necessity to be put in place to require the involvement of humans in lethal attacks. Auditing the algorithms to eliminate any bias is important to avoid disproportionate damage or discrimination to certain groups, as a humanitarian concern, algorithmic fairness is essential. Respect to humanity suggests that human dignity must also be respected in war and that machines should not undermine such value to humanity by eliminating the space of choices inherent in human moral agency. The school human perspective in life-and-death decisions should guide the AWS response, i.e., maintain control and human responsibility in the decision.

International Cooperation

It is extremely important to keep and develop communication channels on platforms like the CCW and the UN General Assembly. States should overcome the differences in terms of AWS definitions, control levels, and acceptable uses to establish a framework that develops a consensus. The input of multi-disciplinary standards of military, legal, technical, as well as the civil society experts could aid in determining what constitutes what would be considered to be homely control, and AI application in armed conflict would be acceptable. Transparency should also be encouraged by the regional and international bodies, as it can be achieved through voluntary information about the AWS policies and practices by establishing confidence and a mutual understanding of the risks and best practices.

Preventive Action

Time is of the essence. Researchers and activists caution that we are quickly running out of time to implement meaningful … controls over autonomous weapon systems". This is the time to take action earlier on before the AWS spread and become well established in military arsenals worldwide. This encompasses the imminent conclusion of new treaties, the introduction of limitations on exporting weapons to hazardous self-sufficient systems and also the setting up of strong industry norms on the ethical creation of AI. It is not until a robust political leadership and the necessary action in this regard is taken in time that the international community can circumvent the probable humanitarian crisis and uphold that

technology is being utilized and not abused to undermine the principles and rules of international humanitarian law.

References

Ahmad, N., Rahim, F., & Aziz, N. (2024). Can international humanitarian law regulate recent drone strikes?: A case study. *JE Asia & Int'l L., 17*, 159.

Al-Fatlawi, A. A., Tamimi, K., & Al-Tamimi, M. J. A. (2024). Feasible Precautions: A Legal Study in the Stable and Variable Concept Under International Humanitarian Law. *Journal of college of Law for Legal and Political Sciences, 10*(37), 598-629.

Ali, A., & Ramamurthy, S. (2025). Humanity at the Crossroads: Human Rights Challenges in the Age of Lethal Autonomous Weapon Systems. *International Journal of Legal Information, 53*(1), 2-13.

Altamimi, A. M. (2022). The Blind Spot in International Human Rights Law: Towards a Human Rights Approach to the Conventional Arms Trade. *Available at SSRN 4209389*.

Asaro, P. (2016). Jus nascendi, robotic weapons and the Martens Clause *Robot law* (pp. 367-386): Edward Elgar Publishing.

Bhatt, C., & Bharadwaj, T. (2024). Understanding the Global Debate on Lethal Autonomous Weapons Systems: An Indian Perspective. Retrieved from Carnegie-Endowement for International Peace

Bode, I., & Nadibaidze, A. (2024). 25 Autonomous Drones. *De Gruyter Handbook of Drone Warfare, 4*, 369.

Bonea, Y. A. (2025). *Algorithms of War: AI, Drones and the Challenge to International Humanitarian Law in the Russia-Ukraine War.* (Masters Thesis), Lund University, Online.

Bousquet, A. J. (2022). *The Scientific Way of Warfare: Order and Chaos on the Battlefields of Modernity* (2nd ed.): Oxford University Press.

Brockmann, K. (2022). Applying export controls to ai: Current coverage and potential future controls. *Armament, Arms Control and Artificial Intelligence: The Janus-faced Nature of Machine Learning in the Military Realm*, 193-209.

Chengeta, T. (2022). Is the convention on conventional weapons the appropriate framework to produce a new law on autonomous weapon systems. In F. Viljoen, F. Charles, T. Dire, S. Ann & K. Magnus (Eds.), *A Life Interrupted: Essays in honour of the lives and legacies of Christof Heyns* (pp. 379-397): Pretoria University Law Press.

Chukwu, N., Yufenyuy, S., Ejiofor, E., Ekweli, D., Ogunleye, O., Clement, T., . . . Obunadike, C. (2024). Resilient chain: AI-enhanced supply chain security and efficiency integration. *International Journal of Scientific and Management Research, 7*(03), 46-65.

Church, J. (2021). *Accountability for Lethal Autonomous Weapons Systems.* The Claremont Colleges. (CMC Senior Theses. 2828)

Diakonia International Humanitarian Law Centre. (2023). IHL Principles On The Conduct Of Hostilities. https://apidiakoniase.cdn.triggerfish.cloud/uploads/sites/2/2023/10/IHL-Principles-Conduct-of-Hostilities.pdf

Dodge, M. (2024). Missile Defense. *2024 Index of U.S. Military Strength*: The Heritage Foundation.

Egeland, K. (2016). Lethal autonomous weapon systems under international humanitarian law. *Nordic Journal of International Law, 85*(2), 89-118.

Finlayson, M., & Islam, A. A. (2025, May 29). Weaponized storytelling: How AI is helping researchers sniff out disinformation campaigns, *FIU News*. Retrieved from https://news.fiu.edu/2025/weaponized-storytelling-how-ai-is-helping-researchers-sniff-out-disinformation-campaigns

Fraczek, J. V. (2024). Is IHL Fit to Deal with the Ones and Zeroes? Analysing the Application of the Principles of Distinction, Proportionality and Precautions to Cyber Operations. *Glasgow Centre for International Law & Security Working papers series, 20*.

Grigoraș, C., & Petre, Ș.-C. (2025). The Influence of Technology on Military Art: The Transformative Role of Unmanned Aerial Vehicles. *International Conference KNOWLEDGE-BASED ORGANIZATION, 31*(1), 104-112. doi: https://doi.org/10.2478/kbo-2025-0012

Guembe, B., Azeta, A., Misra, S., Osamor, V. C., Fernandez-Sanz, L., & Pospelova, V. (2022). The emerging threat of ai-driven cyber attacks: A review. *Applied Artificial Intelligence, 36*(1), 2037254.

Güneysu, G. (2024). Autonomous weapon systems and the humanitarian principle of distinction. *Annales de la Faculté de Droit d'Istanbul*(74), 133-153. doi: 10.26650/annales.2024.74.0007

Hiebert, K. (2024). *The United States Quietly Kick-Starts the Autonomous Weapons Era*, Centre for International Governance Innovation.

Hogue, S. (2021). Project Maven, Big Data, and Ubiquitous Knowledge: The Impossible Promises and Hidden Politics of Algorithmic Security Vision *Automating Crime Prevention, Surveillance, and Military Operations* (pp. 203-221): Springer.

Human Rights Watch. (2020). Stopping Killer Robots-Country Positions on Banning Fully Autonomous Weapons and Retaining Human Control. https://www.hrw.org/report/2020/08/10/stopping-killer-robots/country-positions-banning-fully-autonomous-weapons-and

Human Rights Watch. (2025). A Hazard to Human Rights-Autonomous Weapons Systems and Digital Decision-Making. https://www.hrw.org/report/2025/04/28/hazard-human-rights/autonomous-weapons-systems-and-digital-decision-making

Ibrahim, A., & Shuja, S. F. (2024). Artificial Intelligence led Lethal Autonomous Weapon Systems and Terrorism. *CISS Insight Journal, 12*(1), P24-55.

IHL Centre, E. o. I. H. L. (2025). The principle of precautions in attack. https://www.diakonia.se/ihl/resources/international-humanitarian-law/ihl-principle-of-precautions-in-attack/

Islam, M. S. (2018). The Historical Evolution of International Humanitarian Law (IHL) from Earliest Societies to Modern Age. *Beijing L. Rev., 9*, 294.

Jafariandehkordi, M. (2024). *The AI Battlefield: Legal Challenges of Autonomous Weapon Systems under International Humanitarian Law.* (Masters Thesis), Åbo Akademi University. Retrieved from https://www.doria.fi/handle/10024/189724

Khan, A., Jhanjhi, N. Z., Omar, H. A. H. B. H., Hamid, D. H. H., & Abdulhabeb, G. A. (2025). Future Trends in Generative AI for Cyber Defense: Preparing for the Next Wave of Threats *Vulnerabilities Assessment and Risk Management in Cyber Security* (pp. 135-168): IGI Global Scientific Publishing.

Khan, G. A. (2024). Protection of Civilians in War: The Role of International Humanitarian Law. *JUSTICES: Journal of Law, 3*(3), 204-214.

Kunertova, D. (2025). Embracing Drone Diversity: Five Challenges to Western Military Adaptation in Drone Warfare. *Freeman Air and Space Institute (FASI)*.

Martin, C. (2025). Autonomous Weapons Systems and Proportionality: The Need for Regulation. *Case W. Res. J. Int'l L., 57*, 255.

Mouratidi, Y. (2024). You say precautions, I say prevention: Towards the systemic integration of international humanitarian law and international environmental law *Yearbook of International Humanitarian Law, Volume 25 (2022) International Humanitarian Law and Neighbouring Frameworks* (pp. 3-40): Springer.

Mouratidis, D., Kanavos, A., & Kermanidis, K. (2025). From Misinformation to Insight: Machine Learning Strategies for Fake News Detection. *Information (2078-2489), 16*(3).

Nadaradjane, A. (2022). Preserving Human Dignity in the Age of Autonomous Weapon Systems. *Griffith Journal of Law & Human Dignity, 10*(2), 48-67.

Negri, P., Hupont, I., & Gomez, E. (2024). *Face Recognition: to Deploy or not to Deploy? A Framework for Assessing the Proportional Use of Face Recognition Systems in Real-World Scenarios*. Paper presented at the IEEE International Conference on Automatic Face and Gesture Recognition 2024, USA.

Oringa, J. M. (2024). Ensuring Compliance of Autonomous Weapons System (AWS) with IHL: Navigating Legal Constraints and Optimization Challenges. *East African Journal of Arts and Social Sciences, 7*(2), 174-182. doi: https://doi.org/10.37284/eajass.7.2.2367

Pérez Herrera, L. (2024). *Artificial Intelligence and war from a legal perspective. Are IHL rules enough today?* , Universidad Rey Juan Carlos, Online. Retrieved from https://hdl.handle.net/10115/40877

Perrin, B. (2025). Lethal autonomous weapons systems & international law: Growing momentum towards a new international treaty. *The University of British Columbia Peter A Allard School of Law Research Paper Forthcoming*.

Perrin, B., & Masoud, Z. (2025). The Future of Warfare: National Positions on the Governance of Lethal Autonomous Weapons Systems. *Lieber Institute (West Point)*.

Qiao-Franco, G., & Javadi, M. (2024). Symposium on Military AI and the Law of Armed Conflict: Navigating the Governance of Dual-Use Artificial Intelligence Technologies in Times of Geopolitical Rivalries. *International Commission of Jurists*.

Raska, M., & Bitzinger, R. A. (2023). *The AI wave in defence innovation: Assessing military artificial intelligence strategies, capabilities, and trajectories*: Taylor & Francis.

Rešlová, P. (2023). *Meaningful Human Control in Autonomous Weapons.* (PhD, Doctoral Thesis), University of Geneva.

Samen, A. M. (2024). *Countering Lethal Autonomous Weapon Systems: A Frame Analysis of the Campaign to Stop Killer Robots.* (Masters Thesis), Middle East Technical University (Turkey).

Sankaran, J. (2024). *Bombing to Provoke: Rockets, Missiles, and Drones as Instruments of Fear and Coercion*: Oxford University Press.

Sauer, F. (2016). Stopping 'killer robots': Why now is the time to ban autonomous weapons systems. *Arms Control Today, 46*(8), 8-13.

Shahid, D., & Jamil, A. (2024). Assessing Military Necessity of Autonomous Weapons Systems (AWS) in Armed Conflicts: A Case Study of Iran-Israel. *Margalla Papers, 28*(2), 95-118.

Shanks-Dumont, D. (2025). Martens Clause and ambiguity at the birth. In L. Culbertson & S. L. Karr (Eds.), *Framing Devices and Global Legal Traditions: From the Ancient World to the Modern Nation State* (1st ed., pp. 29): Routledge.

Shany, P. Y., & Shereshevsky, D. Y. (2025). Autonomous weapons and the significance of choosing not to use force. *Institute for Ethics in AI*.

Stockholm International Peace Research Institute. (2020). *New SIPRI and ICRC report identifies necessary controls on autonomous weapons*, Stockholm International Peace Research Institute,.

Szpak, A. (2024). Artificial intelligence and international humanitarian law in the work of the parties to the Conventional Weapons Convention: lethal autonomous weapons *Artificial Intelligence and International Human Rights Law* (pp. 278-293): Edward Elgar Publishing.

Zamani, M. (2025). *How Meaningful is "Meaningful Human Control" in LAWS Regulation?* Lieber Institute (West Point).