



A Systematic Review of Autonomous Weapon Systems under International Humanitarian Law

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Abstract

The battlefield has always been a place of destruction where behind every act of war, there was always a human being who could judge, take responsibility, and was bound by law. But now, that assurance is fading. Artificial intelligence is developing rapidly in modern military systems. Systems like drones are no longer waiting for commands; they identify targets, select them, and engage them by themselves. We can no longer say that a human is behind every act of violence.

As these systems move from movies into real life, the world has to ask: can a machine fight a war legally? Can a machine also be bound by law? This paper's focus is to examine the legality of autonomous weapon systems under international law, focusing on the challenges they are going to bring to accountability, humanitarian rules, and global regulations. This is not just a theory; it is a real, practical problem. The United States, China, Russia, and Israel have already developed these systems, and AI-assisted targeting systems are already part of the defense strategies of major military powers, making real decisions with little to no human oversight.

What is still missing is any real international accountability. As legal scholars have called it, this is a responsibility gap; a fundamental crack in the moral architecture of war itself. When a target is selected, when a life is taken, someone has to answer for it. Autonomous weapons challenge that premise at its very core, and the international legal order has not caught up. The main argument of this paper is that autonomous weapons as they exist today create serious conflicts with the foundational rules of international humanitarian law; and this responsibility gap must be addressed urgently, because war has always needed accountability, and that does not go away just because the combatant no longer has a face.

Keywords: *Autonomous Weapons Systems, International Humanitarian Law, Responsibility Gap, Accountability, Artificial Intelligence in Warfare*



Chapter 1: Introduction, Conceptual Framework, and Research Design

1.1 Introduction & Background to Autonomous Weapon Systems

AI (Artificial Intelligence) has revolutionized many industries, such as defense and military operations. However, one of the most notable advancements in this area has been the emergence of Autonomous Weapon Systems (AWS), which are systems capable of conducting military operations with varying degrees of human control. The implementation of these systems in states is becoming more common as they offer the promise of increased efficiency, accuracy, and effectiveness of operations.

History shows that technology has always made an impact on war.[1] The first military systems were based on automation and pre-programmed responses. With the latest developments in machine learning, robotics, and data processing, weapons are now capable of carrying out more complex tasks with minimal human oversight.

1.2 Classification of Autonomous Weapon Systems

1.2.1 Automated Weapon Systems

Automated systems are instructed to perform according to a set of instructions and react to certain conditions but not make decisions on their own. Their functions are under the substantial control of human operators.[2]

1.2.2 Semi-Autonomous Weapon Systems

Semi-autonomous systems are able to carry out different functions (e.g. navigation, target tracking) on their own, but need human permission to engage a target.

1.2.3 Fully Autonomous Weapon Systems

Activated, fully autonomous systems can recognize, target and pursue targets without the direct assistance of a human. The systems have been subject of much controversy as they could take humans out of decisions to use lethal force.[3]

1.3 The Development of AI in the Military and Autonomous Warfare

AI application in military operations has grown at a fast pace in the last couple of decades. AI is now utilized in intelligence gathering, surveillance, cyber operations, and autonomous navigation, among other applications, in the field of defense systems and data analysis.

1.5 Existing Examples of Autonomous Weapon Systems

There are already many military technologies that exhibit autonomous characteristics.

1.5.1 Harpy Drone

The Harpy drone, developed by Israel, is an autonomous radar-killer loitering munition.[4]

[1] Stuart Russell, *Human Compatible: Artificial Intelligence and the Problem of Control* (Viking 2019); Paul Scharre, *Army of None: Autonomous Weapons and the Future of War* (W W Norton & Company 2018).

[2] Paul Scharre, *Army of None: Autonomous Weapons and the Future of War* (W W Norton & Company 2018) 12-45.

[3] Noel E Sharkey, 'The Evitability of Autonomous Robot Warfare' (2012) 94(886) *International Review of the Red Cross* 787; Michael N Schmitt and Jeffrey S Thurnher, 'Out of the Loop: Autonomous Weapon Systems and the Law of Armed Conflict' (2013) 4 *Harvard National Security Journal* 231.

[4] Robert Sparrow, 'Killer Robots' (2007) 24(1) *Journal of Applied Philosophy* 62.



1.5.2 AI-Enabled Drones

Nowadays, AI-powered drones are capable of performing surveillance, autonomous flight, and even helping with target identification with minimal human intervention. [5]

1.5.3 Loitering Munitions

Examples of autonomous warfare technology include loitering munitions, which can be launched and hover in the air for extended periods of time while waiting for targets to be located.

1.6 International Developments and Regulatory Concerns

The rise in the use of AWS has been a driver of discussions around AWS regulation and control internationally.

1.6.1 The Wassenaar Arrangement

The Wassenaar Arrangement encourages the responsible transfer of conventional arms and dual use technologies. It does not specifically address AWS but helps to control technologies specific to AWS development. [6]

1.6.2 United Nations Discussions on LAWS

Lethal Autonomous Weapon Systems (LAWS) have been the subject of a debate by states under the United Nations Convention on Certain Conventional Weapons (CCW). An important question is about how human control, accountability and IHL compliance are defined. [7]

1.7 Literature Review

The following review situates this study within the existing body of scholarship on Autonomous Weapon Systems, drawing on legal, technical, philosophical, and institutional sources. It surveys seven works central to the debate, evaluates their respective contributions and limitations, and identifies the gap this paper addresses: a doctrinal account of AWS that engages critically with competing scholarly positions while remaining grounded in current state practice.

1.7.1 Paul Scharre, *Army of None: Autonomous Weapons and the Future of War* (2018)

Scharre, a former U.S. Department of Defense official, offers the most comprehensive factual survey of deployed and prototype autonomous systems, including the Aegis Combat System, Phalanx, and the Harpy drone, and develops the widely used taxonomy of human-in-the-loop, human-on-the-loop, and human-out-of-the-loop systems that this paper adopts in Chapter 1. Its principal strength lies in its practitioner-level detail and its balanced treatment of both military necessity and humanitarian risk. Its limitation, for the purposes of this study, is that it approaches AWS primarily as a policy and strategy question rather than through the lens of black-letter international humanitarian law; its legal analysis is largely descriptive rather than doctrinal, and it must therefore be read alongside more legally rigorous sources such as Schmitt and Thurnher. [8]

[5] International Committee of the Red Cross (ICRC), *Autonomous Weapon Systems: Technical, Military, Legal and Humanitarian Aspects* (2014).

[6] United States Department of Defense, *Directive 3000.09: Autonomy in Weapon Systems* (2023).

[7] United Nations, *Report of the Group of Governmental Experts on Emerging Technologies in the Area of Lethal Autonomous Weapon Systems* (2021).

[8] Paul Scharre, *Army of None: Autonomous Weapons and the Future of War* (W W Norton & Company 2018).



1.7.2 Noel E Sharkey, 'The Evitability of Autonomous Robot Warfare' (2012)

Sharkey was among the first scholars to mount a sustained technical challenge to the legality of AWS, arguing that no foreseeable sensor or algorithmic technology could reliably satisfy the principle of distinction in complex, cluttered environments. The article's strength is its early and precise identification of the specific technical bottlenecks, such as sensor discrimination and contextual judgement, that continue to define the distinction debate a decade later. Its main limitation is temporal: writing in 2012, before the CCW GGE process had produced its guiding principles and before deep learning-based targeting systems matured, Sharkey could not evaluate the generation of AI-enabled systems now in operational use, which somewhat limits the article's predictive precision even as its conceptual framework remains sound. [9]

1.7.3 Michael N Schmitt and Jeffrey S Thurnher, 'Out of the Loop: Autonomous Weapon Systems and the Law of Armed Conflict' (2013)

This article remains the most cited doctrinal treatment of AWS under IHL, systematically applying distinction, proportionality, and precaution to autonomous targeting and concluding that compliance is a question of engineering and design rather than an inherent legal impossibility. Its authority derives from Schmitt and Thurnher's standing as established international humanitarian law scholars and from the article's methodical, treaty-text-grounded approach, which this paper relies on extensively in Chapter 2. Its limitation is also temporal: like Sharkey, the authors wrote before a decade of subsequent advances in machine learning and sensor fusion, so some of their technological assumptions about the near-term trajectory of AWS capability are now dated, even though their legal framework remains the analytical benchmark against which newer developments are measured. [10]

1.7.4 Robert Sparrow, 'Killer Robots' (2007)

Sparrow's article is the foundational source for the 'responsibility gap', the concept around which this paper's own thesis is organised, and it approaches AWS primarily through moral and political philosophy rather than positive law, arguing that no existing framework of state, command, or individual responsibility can coherently attach to a fully autonomous system's lethal decisions. Its strength lies in the clarity and originality of this argument, which has shaped nearly all subsequent accountability scholarship, including this paper's Chapter 3. Its limitation is that, published in 2007, it necessarily predates codified governance instruments such as the U.S. Department of Defense Directive 3000.09 and the CCW GGE's guiding principles, so it does not engage with the practical regulatory apparatus that has since emerged, even partially, to address the problem it identifies. [11]

1.7.5 Ronald C Arkin, Governing Lethal Behavior in Autonomous Robots (2009)

Writing from a robotics and engineering perspective, Arkin offers the most sustained optimistic counterpoint in the literature, proposing an 'ethical governor' architecture designed to constrain an autonomous system's targeting decisions within IHL-compliant bounds and arguing that properly designed systems could, in principle, comply with the law more consistently than human soldiers, who are subject to fear, fatigue, and the desire for revenge. This optimism is valuable precisely because it is a minority position, and this paper draws on it in section 2.9 as the counterweight to Sharkey and Sparrow's skepticism. Its limitation is that the ethical governor remains a largely theoretical and prototype-stage proposal that has not been demonstrated at scale in an actual armed conflict, so its central empirical claim, that AWS can outperform humans on IHL compliance, remains unproven rather than refuted. [12]

[9] Noel E Sharkey, 'The Evitability of Autonomous Robot Warfare' (2012) 94(886) *International Review of the Red Cross* 787.

[10] Michael N Schmitt and Jeffrey S Thurnher, 'Out of the Loop: Autonomous Weapon Systems and the Law of Armed Conflict' (2013) 4 *Harvard National Security Journal* 231.

[11] Robert Sparrow, 'Killer Robots' (2007) 24(1) *Journal of Applied Philosophy* 62.

[12] Ronald C Arkin, *Governing Lethal Behavior in Autonomous Robots* (CRC Press 2009).



1.7.6 ICRC, Autonomous Weapon Systems: Technical, Military, Legal and Humanitarian Aspects (2014)

This ICRC report, produced from expert convenings involving states, technologists, and legal scholars, offers the most institutionally authoritative and comprehensive account of AWS across technical, military, legal, and humanitarian dimensions, and is cited repeatedly throughout Chapters 1 and 2 of this paper for its balanced framing of the distinction and proportionality debates. Its strength is precisely this institutional credibility and breadth. Its limitation is that, as a consensus document produced by an organization whose mandate is neutrality and humanitarian protection rather than legal advocacy, it deliberately avoids staking out a strong normative position on the ban-versus-regulation question, making it more useful as a descriptive foundation than as a source of prescriptive argument. [13]

1.7.7 Human Rights Watch and Harvard Law School International Human Rights Clinic, Losing Humanity: The Case Against Killer Robots (2012)

This report was instrumental in launching the Campaign to Stop Killer Robots and remains the most detailed advocacy-oriented case for a preemptive ban on fully autonomous weapons, combining legal argument with extensive documentation of state positions. Its strength lies in the thoroughness of its survey of state practice, which this paper's own methodology, described in section 1.12, draws on as a model. Its limitation is that, as an advocacy document rather than a neutral academic source, its selection and framing of evidence is oriented toward supporting a ban, which makes it less useful as a standalone authority and better suited to being triangulated against more doctrinally neutral sources such as Schmitt and Thurner and the ICRC.[14]

Taken together, this literature reveals a field divided along two axes: a technical-legal axis, running from Sharkey and Sparrow's skepticism to Arkin's optimism, with Schmitt and Thurner occupying the doctrinal middle ground; and an institutional axis, running from ICRC's studied neutrality to Human Rights Watch's advocacy for a ban. This paper positions itself within the doctrinal middle ground on the first axis, discussed further in section 2.9, while adopting the institutional sources' documentary rigour on the second.

1.8 Statement of the Research Problem

As Autonomous Weapon Systems are rapidly evolving, existing international law may not be applicable to them. There is no comprehensive legislation to address concerns about accountability and responsibility and protection of civilians in armed conflict.

1.9 Research Questions

1. What are Autonomous Weapon Systems and what are its different classifications?
2. What is the impact of AWS on the use of IHL?
3. Do existing legal frameworks provide enough regulation for AWS?
4. What problems of accountability are raised when people choose to go to war independently?

[13] International Committee of the Red Cross (ICRC), *Autonomous Weapon Systems: Technical, Military, Legal and Humanitarian Aspects* (2014).

[14] Human Rights Watch and Harvard Law School International Human Rights Clinic, *Losing Humanity: The Case Against Killer Robots* (2012).



1.10 Research Objectives

This study intends to explore whether and how the use of Autonomous Weapon Systems is regulated by International Humanitarian Law, identify issues of accountability and discuss current international regulatory initiatives.

1.11 Research Hypothesis

The study proposes that the current International Humanitarian Law does not fully address the regulation of FAWS and that the creation of new international law is necessary to ensure accountability and meaningful human control.[15]

1.12 Research Methodology

The research has a doctrinal approach, which is aimed at analyzing international treaties, conventions, United Nations documents, judicial decisions, scholarly books and journal articles on autonomous weapons and International Humanitarian Law. [16]

Sources were identified through a structured search of academic databases (HeinOnline, JSTOR, SSRN) and institutional repositories, including the ICRC's resource library, the UN CCW/GGE working paper archive, and national defence directives, using search terms such as 'autonomous weapon systems,' 'lethal autonomous weapons,' 'meaningful human control,' and 'accountability gap.' Sources published between 2007 and 2026 were considered, with priority given to peer-reviewed journal articles, treaty texts, official UN and state documents, and established monographs; sources without clear institutional or scholarly authority, and non-English materials, were excluded. Where multiple sources addressed the same issue, the most recent or most frequently cited authority was preferred, so as to keep the analysis current and reliable.

1.13 Scope and Limitations of the Study

This research is limited to secondary sources only and does not contain primary sources. The study is concerned with Autonomous Weapon Systems and their compatibility with International Humanitarian Law. Some limitations are the changing nature of AI technology, inconsistencies in definitions, and limited access to classified military information.

1.14 Synthesis and Transition

Introduction to Autonomous Weapon Systems, their evolution, classification and concerns for regulation were introduced in this chapter. It also described the research problem, objectives, methodology and scope of the study.

[15] Ian McLeod, *Legal Method* (10th edn, Palgrave Macmillan 2020).

[16] Human Rights Watch and Harvard Law School International Human Rights Clinic, *Losing Humanity: The Case Against Killer Robots* (2012).



Chapter 2: Legal Analysis of Autonomous Weapon Systems under International Humanitarian Law

2.1 Introduction

With the advent of Artificial intelligence, there have been rapid technological advancements in military capabilities enabling the rise of Autonomous Weapon Systems or AWS. This has invited considerable debates about their alignment with International Humanitarian Law (IHL) and led to humanitarian concerns about whether these systems can meet legal obligations that are typically fulfilled by human decision-makers. AWS, once launched or activated, can choose and engage targets without further human inputs; this autonomy raises grave concerns about applying established legal principles on these systems. Therefore, we must evaluate the legality of AWS within the framework of IHL, particularly regarding conduct in hostilities and assigning responsibility for unlawful acts.

2.2 Applicability of International Humanitarian Law to AWS

All conventional and recent warfare methods, means and technologies are governed by International Humanitarian Law. Although, AWS is not specifically addressed in The Geneva Convention or their Additional Protocols, the rules still apply regardless of a weapon system's technology.[17] Consequently, AWS must fulfill the same legal standards as any conventional warfare weapons. The main challenge isn't whether AWS comes under the same legal regulations of IHL, but whether these autonomous systems can fulfill legal requirements that are based on human judgements.

2.3 The Principle of Distinction

Principle of Distinction is a central notion under IHL, it exclusively requires all combatants to distinguish themselves from civilians, and all parties in an armed conflict to distinguish between combatants and civilians at all times. It highlights that certain groups must be protected in a war and the only aim of a war weaponry or technology should be to weaken the opposing party. In conventional warfare, a human i.e. military personnel member takes targeting decisions based on experience, awareness and factoring multiple facets. On the other hand, AWS relies on sensors, algorithms and pre-set criteria to identify targets.

The key concern under IHL is whether autonomous systems are capable of accurately identifying lawful targets in complex, dynamic environments. Mistakes in target identification can lead to unlawful civilian casualty and thus, violating the principle of distinction. Improvements in machine learning are estimated to enhance distinction but the reliability of autonomous systems in unpredictable battlefields is still questionable.[18]

2.4 The Principle of Proportionality

The principle of proportionality recognizes that attacks on civilians are often evident in periods of hostilities; however, a certain threshold for anticipated civilian casualties is permissible under IHL. Principle of Proportionality calculates the limit of incidental harm by accessing qualitative judgements about military necessity and humanitarian impacts. Autonomous systems are not competent to take into the moral, contextual, and situational factors that make up proportionality evaluations. An AWS can compute probabilities and estimate outcomes, but it can not judge whether the civilian harm at hand is excessive. Thus, fully autonomous systems raise concerns about their ability to fulfill the requirements to be apt in the field. [19]

[17] Protocol Additional to the Geneva Conventions of 12 August 1949 and Relating to the Protection of Victims of International Armed Conflicts (Protocol I), June 8, 1977, 1125 U.N.T.S. 3.

[18] Michael N Schmitt and Jeffrey S Thurnher, 'Out of the Loop: Autonomous Weapon Systems and the Law of Armed Conflict' (2013) 4 Harvard National Security Journal 231.

[19] Paul Scharre, *Army of None: Autonomous Weapons and the Future of War* (W W Norton & Company 2018); ICRC, *Autonomous Weapon Systems: Technical, Military, Legal and Humanitarian Aspects* (2014).



2.5 The Principle of Military Necessity

Military necessity allows use of force essential to achieve a legitimate military goal, as long as that force isn't prohibited by international law. AWS supporters argue that these systems can improve operational effectiveness by processing information quickly, enhancing precision, and reducing risks to military personnel. However, military necessity does not excuse actions that violate humanitarian obligations. Even if AWS provides strategic benefits, they can only be used if they operate lawfully within the limits set by IHL. Consequently, operational efficiency alone is not a valid reason for the widespread use of autonomous weapons. [20]

2.6 Precaution in Attack and Human Control

IHL requires parties to take all practical precautions to minimize civilian harm. This includes confirming targets, choosing the right means of attack, and halting attacks when situations change. Adhering to precautionary measures is especially important for AWS, as battlefield conditions can shift quickly.

Many states, scholars, and international organizations advocate for maintaining significant human control over autonomous weapons. Human oversight adds a layer of safety against mistakes and allows commanders to step in when unexpected situations arise. Therefore, the idea of meaningful human control has emerged as a key principle in current discussions about regulating AWS. [21]

2.7 The Martens Clause and Principles of Humanity

When existing treaty law doesn't offer clear answers, the Martens Clause acts as an important interpretative guideline. Martens Clause as follows; *"Until a more complete code of the laws of war has been issued, the High Contracting Parties deem it expedient to declare that, in cases not included in the Regulations adopted by them, the inhabitants and the belligerents remain under the protection and the rule of the law of nations, as they result from the usages established among civilized peoples, from the laws of humanity and the dictates of public conscience."*

It states that civilians and combatants should be protected by humanity's principles and public conscience. The use of AWS raises questions beyond just technical legality. Even if an autonomous system could theoretically comply with IHL, concerns linger about whether decisions involving lethal force should be left to machines. Allowing algorithms to make life-and-death choices may undermine human dignity and moral responsibility, which the Martens Clause reflects.[22]

2.8 Accountability Gap and Legal Responsibility

One major legal issue associated with AWS is the accountability gap. When an autonomous weapon causes unlawful harm, it can be hard to determine who is responsible. Responsibility could fall on commanders, operators, programmers, manufacturers, or the state itself.

Under current international law, states hold responsibility for wrongful acts committed by their military operations. Commanders can also be responsible if they fail to supervise properly or knowingly deploy systems that didn't meet legal obligations. However, proving individual criminal liability becomes more complex when autonomous algorithms enter the picture. Since machines lack legal status and cannot be punished, accountability must ultimately remain with human decision-makers and states, and so the highest decision-making autonomy should remain with humans.[23]

[20] ICRC, Autonomous Weapon Systems: Technical, Military, Legal and Humanitarian Aspects (2014); ICRC, Position on Autonomous Weapon Systems (2021).

[21] ICRC, Position on Autonomous Weapon Systems (2021); United Nations, Report of the Group of Governmental Experts on Emerging Technologies in the Area of Lethal Autonomous Weapon Systems (2021).

[22] Hague Convention (IV) Respecting the Laws and Customs of War on Land, Preamble (Martens Clause), Oct. 18, 1907; Protocol I (n 17).

[23] International Law Commission, Draft Articles on Responsibility of States for Internationally Wrongful Acts, with Commentaries, U.N. Doc. A/56/10 (2001).



2.9 Compliance Challenges in Contemporary Armed Conflict

Despite significant technological advancements, uncertainty remains about whether AWS can reliably meet the requirements of IHL. The unpredictable nature of armed conflict and the complexity of human behavior create challenges that current autonomous systems may struggle to navigate. Additionally, the context-sensitive nature of legal judgments can not fully encapsulate the working of these systems at present.

Scholarly opinion on this question is not unified. Arkin takes an optimistic position, arguing that autonomous systems, properly designed, could in principle comply with IHL more consistently than human soldiers, since they are not subject to fear, fatigue, or the desire for revenge that often drives violations in combat.[24] Sharkey and Sparrow reject this view, arguing that distinction and proportionality are inherently contextual judgements that cannot be reduced to computable rules, regardless of technical advancement.[25] Schmitt and Thurnher occupy a middle ground, accepting that current AWS fall short of these standards without concluding that this is a permanent or definitional limitation of the technology. [26] This paper aligns closer to the latter position: it does not treat Arkin's optimism as demonstrated, but it also does not go as far as Sharkey and Sparrow in ruling out future compliance altogether.

Thus, the key legal question is not if IHL applies to AWS, it clearly does but if autonomous systems can function within its boundaries while maintaining meaningful human control and protecting humanitarian principles. [27]

2.10 Chapter Summary and Transition

This chapter explored the compatibility of Autonomous Weapon Systems with the main principles of International Humanitarian Law. This analysis shows that the principles of distinction, proportionality, military necessity, precaution, and humanity still apply to autonomous weapons. However, serious doubts exist about whether AWS can independently meet these obligations in complex operational settings. These concerns have led to increasing calls for meaningful human control and stronger regulatory measures. After examining if AWS can comply with IHL, the next chapter will discuss a related issue: who holds legal responsibility when autonomous systems cause unlawful harm. [28]

[24] Ronald C Arkin, *Governing Lethal Behavior in Autonomous Robots* (CRC Press 2009).

[25] Noel E Sharkey, 'The Evitability of Autonomous Robot Warfare' (2012) 94(886) *International Review of the Red Cross* 787; Robert Sparrow, 'Killer Robots' (2007) 24(1) *Journal of Applied Philosophy* 62.

[26] Michael N Schmitt and Jeffrey S Thurnher, 'Out of the Loop: Autonomous Weapon Systems and the Law of Armed Conflict' (2013) 4 *Harvard National Security Journal* 231.

[27] Human Rights Watch, *Losing Humanity: The Case Against Killer Robots* (2012); ICRC, *Autonomous Weapon Systems and International Humanitarian Law: Selected Issues* (2025).

[28] ICRC, *Autonomous Weapon Systems and International Humanitarian Law: Selected Issues* (2025).



Chapter 3: Accountability and Legal Responsibility for Autonomous Weapon Systems

3.1 Introduction

War has always carried an uncomfortable but essential truth: someone must answer for it. Whether it was a soldier pulling the trigger, a commander issuing orders, or a state authorizing force, the law of war relied on this foundation: behind every violent act, there was a responsible human. But autonomous weapon systems quietly disrupt this foundation. When a machine selects a target and engages it without a human making that final decision, the question becomes far more unsettling: who is responsible when no human finger is on the trigger?

3.2 The Accountability Gap in Autonomous Warfare

This is what legal scholars have called the “responsibility gap.” It is not just a theoretical issue found in a law journal; it is a real, structural crack in the way international law operates. Every framework we have, whether the Geneva Conventions or the Rome Statute, has an assumption that accountability can be traced back to a human. Autonomous systems break that chain. The machine acts, but it cannot be prosecuted, punished, or feel the weight of its actions. Thus, the law is left chasing a ghost. [29]

3.3 State Responsibility under International Law

When something goes wrong, the first place the law looks is the state. Under the customary international law and the Responsibility of States for Internationally Wrongful Acts, a state is responsible for actions taken by its military systems. If an autonomous weapon violates international humanitarian law, the state deploying it bears responsibility. However, state responsibility operates at a macro level, addressing reparations and diplomacy, not individual criminal punishment. A state can be held accountable without anyone going to jail, and in the context of war crimes, this feels deeply inadequate. [30]

3.4 Command Responsibility

International criminal law offers another route: command responsibility. Under this doctrine, a commander can be held liable for crimes committed by his forces under his effective control, if he knew or should have known and failed to prevent or punish. Applied to autonomous weapons, a commander who deployed a risky system or failed to properly supervise it could bear criminal liability. However, this doctrine was built for human subordinates. With autonomous systems operating at machine speed, real-time oversight is nearly impossible, and the doctrine strains under the weight of the technology. [31]

3.5 Individual Criminal Liability

Beyond commanders, soldiers, operators, or other decision-makers can in theory face criminal liability if they deliberately deployed a system they knew would cause unlawful harm. But in practice, proving intent and knowledge in algorithmic decision-making is incredibly difficult. Criminal law demands a clear causal link between a person and a crime, but autonomous weapons blur that link dangerously. [32]

[29] Robert Sparrow, ‘Killer Robots’ (2007) 24(1) Journal of Applied Philosophy 62.

[30] International Law Commission, Draft Articles on Responsibility of States for Internationally Wrongful Acts, with Commentaries, U.N. Doc. A/56/10 (2001).

[31] Prosecutor v. Delalić (Čelebići Case), Case No. IT-96-21-T, Judgment ¶ 346 (Int’l Crim. Trib. for the Former Yugoslavia Nov. 16, 1998).

[32] Rome Statute of the International Criminal Court arts. 17, 25, 28, 30, July 17, 1998, 2187 U.N.T.S. 90.



3.6 Liability of Programmers, Manufacturers, and Other Private Actors

If commanders or operators bear accountability, the same question extends to programmers and manufacturers who built the system. Some scholars argue that product liability frameworks could hold manufacturers responsible when their systems cause unlawful harm. However, this remains largely untested. International humanitarian law was never designed with Silicon Valley in mind, and there is a meaningful space for holding developers responsible for criminal negligence where their carelessness led to serious harm. [33]

3.7 Challenges before International Criminal Law

The International Criminal Court and other international criminal mechanisms face serious structural challenges with autonomous weapons. The Rome Statute requires proof of intent for most serious crimes, but machines have no intent. As human decision-making moves further from the moment of harm, it becomes harder to establish the mental element that criminal law requires. This risks creating a situation where serious violations of the laws of war go entirely unpunished, because no one fits neatly into existing criminal law categories. [34]

3.8 Attribution Problems and Algorithmic Decision-Making

Attribution becomes immensely harder when algorithms are involved. Algorithmic systems can behave in ways their designers never anticipated, especially in complex battlefield environments. When an autonomous weapon makes an unexpected decision, tracing that decision back through layers of code, training data, and human authorization is a legal nightmare. The more autonomous the system is, the more the chain of attribution will fall apart. [35]

3.9 Adequacy of Existing Accountability Frameworks

From all of the existing frameworks, none of them fully addresses the problem, whether state responsibility, command responsibility, individual criminal liability, or product liability. Each captures part of it but leaves significant gaps. What is needed is not just a reinterpretation of existing law but a new, dedicated accountability framework specifically designed for the reality of autonomous warfare. [36]

3.10 Chapter Summary and Transition

This chapter identified the core problem: accountability for autonomous weapon systems. The issue is not just that these weapons can kill; it is that they can kill without anyone being clearly responsible. This is a fundamental rupture in the moral and legal logic of war. As the next chapter will show, the international community has begun to grapple with this problem, but the gap between debate and binding legal obligation remains dangerously wide. [37]

[33] Ronald C Arkin, *Governing Lethal Behavior in Autonomous Robots* (CRC Press 2009).

[34] Rome Statute of the International Criminal Court, July 17, 1998, 2187 U.N.T.S. 90, art. 30.

[35] Human Rights Watch, *Stopping Killer Robots: Country Positions on Banning Fully Autonomous Weapons* (10 August 2020).

[36] United Nations General Assembly Resolution 78/241, U.N. Doc. A/RES/78/241 (22 December 2023).

[37] Congressional Research Service, IF11294, *International Discussions Concerning Lethal Autonomous Weapon Systems* (2025).



Chapter 4: International Regulation, Future Governance, Findings and Conclusion

4.1 Introduction

The rise of Autonomous Weapon Systems has created an urgent need for international regulation. The previous chapters have already established that AWS are not outside the scope of International Humanitarian Law, but their growing autonomy creates serious difficulties for distinction, proportionality, precaution, and accountability. The legal debate is no longer limited to whether these systems can exist, but whether they can be governed in a way that preserves humanity in armed conflict. This chapter evaluates current international efforts, examines competing regulatory approaches, and presents the main findings of the study. It also proposes a framework for future governance that balances military innovation with legal restraint.

4.2 The Convention on Certain Conventional Weapons (CCW) and GGE Discussions on LAWS

The primary international forum for autonomous weapons has been the Convention on Certain Conventional Weapons, where a Group of Governmental Experts on Lethal Autonomous Weapons Systems (GGE) has been meeting since 2014. The GGE has produced guiding principles, including the acknowledgment that human responsibility must be retained over lethal force. However, these principles given are not law. After more than ten years of discussions, there is still no binding treaty, no prohibition, and even no agreed definition of what an autonomous weapon is. The GGE process has been important in keeping the conversation alive, but it has not delivered the legal architecture that the situation demands. [38]

4.3 State Practice and Emerging State Positions on AWS

State practice reveals a deep divide. A group of states that includes Austria, New Zealand, and several others, have been arguing for a legally binding instrument to govern the autonomous weapon systems. And, in contrast, a larger, more militarily powerful group including the United States, Russia, China, and the United Kingdom has resisted binding regulation. They prefer voluntary guidelines and national policy reviews. This divide is not merely diplomatic but, it reflects a fundamental disagreement about whether autonomous weapons are a problem to be solved or a capability to be protected. Until the major military powers align, binding international law will remain out of reach. [39]

4.4 Comparative Approaches of Major Military Powers

The United States operates under Department of Defense Directive 3000.09, which requires an appropriate level of human judgment over the use of force, but it stops short of requiring meaningful human control at the moment of engagement. [40]

China has been publicly supporting for a ban on fully autonomous lethal weapons while simultaneously, is developing some of the most advanced AI-enabled military systems in the world. In other words, China is contradictory, on one hand, it calls for a ban, but on the other, it advances some of the most advanced AI-enabled military systems in the world. [41]

[38] Convention on Certain Conventional Weapons, Group of Governmental Experts on Lethal Autonomous Weapon Systems, U.N. Doc. CCW/GGE.1/2019/3 (25 September 2019).

[39] Austria et al., U.N. Doc. CCW/GGE.1/2020/WP.1 (1 September 2020); Human Rights Watch, Stopping Killer Robots: Country Positions on Banning Fully Autonomous Weapons (10 August 2020).

[40] U.S. Department of Defense, Directive 3000.09: Autonomy in Weapon Systems (25 January 2023).

[41] Human Rights Watch, Stopping Killer Robots: Country Positions on Banning Fully Autonomous Weapons and Retaining Human Control (10 August 2020); Lieber Institute, Human Oversight with Chinese Characteristics (27 March 2026) <<https://lieber.westpoint.edu/human-oversight-chinese-characteristics-lethal-autonomous-weapons-ccw-gge/>> accessed 18 July 2026.



And if we look into other major powers, Israel has also deployed autonomous systems operationally,[42] while Russia has been openly dismissive of restrictions, opposing any ban on autonomous weapons. [43]

And looking into Indian Framework, so India has adopted a comparatively cautious position on autonomous weapon systems. While being an active participant in international discussions under the CCW framework, India has not supported a strict ban and has emphasized on the need to balance the humanitarian concerns along with the technological and security interests.[44] Simultaneously, India continues to invest in AI-enabled defense technologies as part of its efforts towards Military modernization. What emerges from this comparison is not a coherent global approach, but a fragmented landscape where every major power advances the technology while resisting accountability.

4.5 The Ban versus Regulation Debate

The central policy debate is whether autonomous weapons should be banned outright or regulated. Those in favour of a ban argue that certain decisions, specifically, the decision to take a human life, must always remain with a human. Those in favour of regulation argue that a total ban is not a mindful decision and would simply push development underground. Both positions have merit: a ban is morally and ethically clearer, but practically difficult, while regulation is more achievable but risks legitimizing systems that may never be fully controlled. The honest answer is neither option is perfect, and both have merits and demerits as well. What is crucial is that the absence of either approach is even worse, because it leaves a dangerous accountability vacuum. Without a clear legal framework, we are risking a future where autonomous weapons proliferate without any safeguards. [45]

4.6 Ethical and Human Rights Concerns

The legal debate cannot be separated from ethical and human rights concerns. Delegating life-and-death decisions to machines raises questions about dignity, accountability, and the moral value of human judgment in war. From a human rights perspective, the risk of unlawful civilian harm is especially troubling where autonomous systems operate in complex, populated environments. Even if a system technically satisfies some legal requirements, it may still be unacceptable if it removes meaningful human responsibility from the use of force. These concerns reinforce the argument that human control must remain central to lawful and legitimate military decision-making. [46]

4.7 Critical Evaluation of the Adequacy of Current International Law

Current international law is not adequate. International humanitarian law was built on the assumption that humans would be the actors making decisions. But with autonomous systems, the principle changes. Proportionality and precaution require contextual judgments, judgments that autonomous systems can approximate but not fully replicate as humans. The Rome Statute, which was discussed in Chapter 3, requires intent, something machines do not possess. Command responsibility requires oversight that machines cannot provide, and their speed makes oversight impossible. The law has not failed because it is poorly written; it has failed because it was never designed for this.

[42] Yuval Abraham, ‘Lavender’: The AI Machine Directing Israel’s Bombing Spree in Gaza, +972 Magazine (3 April 2024) <<https://www.972mag.com/lavender-ai-israeli-army-gaza/>> accessed 18 July 2026.

[43] Statement by the Russian Federation, Sixth Review Conference of the Convention on Certain Conventional Weapons (14 December 2021) (Russia stating it is ‘against the elaboration of any legally binding instrument’ on autonomous weapons systems).

[44] Carnegie Endowment for International Peace, Understanding the Global Debate on Lethal Autonomous Weapons Systems: An Indian Perspective (2024) <<https://carnegieendowment.org/research/2024/08/understanding-the-global-debate-on-lethal-autonomous-weapons-systems-an-indian-perspective>> accessed 18 July 2026.

[45] Lieber Institute, Legal Accountability for AI-Driven Autonomous Weapons (9 March 2026) <<https://lieber.westpoint.edu/legal-accountability-ai-driven-autonomous-weapons/>> accessed 7 June 2026.

[46] ICRC, Autonomous Weapons: The ICRC Recommends Adopting New Rules, Statement Before the CCW GGE on LAWS (3 August 2021); Congressional Research Service, IF11294, International Discussions Concerning Lethal Autonomous Weapon Systems (2025).



4.8 Findings of the Study

This study finds that autonomous weapon systems, as they currently exist and are being developed, create a serious and unresolved conflict with international humanitarian law. The accountability gap, which legal scholars call the responsibility gap, is real and structural. No existing legal framework can fully resolve the issue of accountability, whether state responsibility, command responsibility, or individual criminal liability. The international community has recognized the challenge, but it has not responded with the urgency or seriousness that it demands.

4.9 Recommendations for Future Governance

After reviewing these findings, future governance must prioritize three things. First, a binding international instrument must be arranged that defines autonomous weapon systems, establishes minimum standards for human control, and creates accountability mechanisms. Second, meaningful human control must be a legal requirement, not just a policy preference. Third is transparency obligations, that is a declaration or something that would not let the development of AWS be secret, must be imposed on states that are developing these systems, so that international oversight is possible.

4.10 Proposed International Regulatory Framework for Autonomous Weapon Systems

Existing proposals, such as the ICRC's call for new rules and the Campaign to Stop Killer Robots' push for a ban, offer important foundations. Building on these, this paper proposes a tiered regulatory framework. Systems capable of fully autonomous lethal targeting should be prohibited. Systems having meaningful human oversight at the point of engagement should be permitted, but should also be mandatorily subject to strict certification, transparency, and accountability standards. An international monitoring body that is modeled on the IAEA, should also be established to verify compliances. This framework does not eliminate autonomous military technology; instead, it insists that the decision to take a life always remains a human one. A robot cannot be entrusted with that responsibility. [47]

Conclusion

We know that war has always been a place of immense destruction, and it has always required accountability. That accountability does not disappear just because the weapon no longer has a face. Autonomous weapons system highlights one of the most serious legal and moral challenges that the international order has been facing. The law is not helpless, but it is dangerously behind. It is the need of the hour, that the gap between what technology can do and what the law can govern must be closed urgently, not through more discussion, but through binding obligation. The question is no longer whether autonomous weapons are legal, the question is whether the world has the will to make them so.

[47] Treaty on the Non-Proliferation of Nuclear Weapons, July 1, 1968, 729 U.N.T.S. 161; Wassenaar Arrangement, About Us <<https://www.wassenaar.org/about-us/>> accessed 7 June 2026.



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