

Prof. Aapsing R. Vasave

Asst. Prof. Defence and Strategic Studies

Late M D Sisode Arts and Commerce College Nardana, Dist. Dhule

Abstract: *This paper looks at the legal problems created by Autonomous Weapons Systems (AWS) under international law. AWS are weapons that can choose and attack targets on their own after they are activated, which reduces direct human control in war. The study explains how the fast growth of artificial intelligence in military use is creating new legal challenges. It focuses on key issues like who are responsible when something goes wrong, whether these systems can follow basic war rules, the lack of clear human control, and how unpredictable these machines can be. It also discusses existing laws like the Geneva Conventions and Additional Protocol I, and shows that they were not made for such technologies. The paper highlights ongoing global discussions and concludes that clearer rules are needed to keep humans responsible and protect basic humanitarian values in future warfare.*

Key Words: Autonomous Weapon System, International Humanitarian Law, Accountability, Accessibility, Geneva Conventions, Additional Protocol.

Introduction:

Autonomous Weapons Systems (AWS) are generally understood as weapons that can identify and attack targets on their own after being activated, without direct human involvement at the moment of decision. In simple terms, once such a system is switched on, it can decide whom or what to strike based on pre-programmed instructions and data. This is very different from traditional weapons, where a human operator makes the final decision to use force. As noted by Rupal Malik, this shift raises serious concerns because the most important decision in warfare the use of lethal force is no longer fully controlled by humans (Malik & Chakka, 2022). This change is not only technical but also legal in nature, because laws of war have always assumed human judgment and responsibility.

In recent years, the rapid growth of artificial intelligence has made such systems more practical and more common in military discussions. AI is now being used in areas like surveillance, data analysis, and target recognition. According to Arjun Subramaniam, modern warfare is increasingly shaped by technology, where speed and quick decision-making are very important (Subramaniam, 2020). Because machines can process information much faster than humans, there is a strong push to include AI in combat systems. However, this also creates problems. Machines may act faster, but they may not always act correctly, especially in complex and unpredictable battlefield situations. This makes the use of AI in warfare both useful and risky at the same time.

The main concern that comes out of this development is the legal uncertainty under international law. Existing rules, especially those under the Geneva Conventions, were made at a time when humans were always in control of weapons. These laws require clear judgment, such as distinguishing between civilians and combatants and avoiding unnecessary harm. Rupal Malik points out that autonomous system may find it difficult to follow these rules properly because they cannot fully understand human behaviour or complex situations (Malik & Chakka, 2022). This creates a gap between what the law expects and what the technology can actually do, leading to uncertainty about whether AWS can be used legally.

Another important issue is responsibility. If an autonomous weapon makes a mistake, it is not easy to decide who should be held accountable. It could be the programmer who designed the system, the military officer who deployed it, or the state that approved its use. Uday Singh explains that this lack of clear responsibility creates a serious problem for international law, which depends on identifying who is responsible for violations (Singh, 2019). Without clear accountability, it becomes difficult to ensure justice or prevent misuse. Because of this, AWS challenge not only specific legal rules but also the basic way in which law deals with responsibility in armed conflict.

Objectives of the Study:

1. To examine the applicability of international law to AWS
2. To study key legal challenges such as accountability and compliance
3. To examine gaps in existing frameworks like the Geneva Conventions
4. To suggest the need for regulatory developments

Conceptual Framework (Legal):

Autonomous Weapons Systems (AWS) are often explained through the idea of different levels of human control over weapon use. These levels are usually described as human-in-the-loop, human-on-the-loop, and

human-out-of-the-loop systems. In the first type, a human must approve every attack decision. In the second, the system can act on its own but is constantly monitored by a human operator who can stop it if needed. In the third type, the system can select and engage targets completely on its own after activation. Many Indian defence scholars, including V. K. Saxena, note that the most serious concern arises in fully autonomous systems because human judgment is removed from life-and-death decisions. This shift creates new uncertainty in how responsibility and control are understood in warfare.

The legal foundation for regulating armed conflict is International Humanitarian Law (IHL). IHL is a set of rules that tries to limit harm during war and protect people who are not taking part in fighting. Its main ideas include distinction (knowing who is a combatant and who is a civilian), proportionality (not causing excessive harm compared to the military gain), and precaution (taking care to avoid unnecessary damage). These principles assume that humans are making careful decisions during conflict. Indian researcher S. R. Bhansali explains that IHL is built on human responsibility, and this becomes a challenge when machines begin to take over decision-making roles in combat situations.

The most important legal instruments in this area are the Geneva Conventions. These conventions form the backbone of modern war law and focus on protecting civilians, wounded soldiers, and prisoners of war. However, they were written long before autonomous weapons existed. Because of this, they do not directly explain how AI-based systems should be controlled or judged. According to Indian legal expert G. S. Bajpai, the challenge is not that these laws are outdated, but that they were never designed for machines making combat decisions. This creates difficulty in applying them to modern technology.

Another key legal document is Additional Protocol I. This protocol adds stronger protections in armed conflict and includes the important requirement that states must review new weapons before using them. This is known as legal weapons review. In theory, this rule should ensure that autonomous weapons follow international law. However, in practice, it is very difficult to predict how an AI system will behave in real combat conditions. Indian strategic analyst Ajay Lele notes that unpredictable machine behaviour creates serious doubt about whether existing review systems are strong enough for autonomous technologies.

Overall, International Humanitarian Law, along with the Geneva Conventions and Additional Protocol I, still provides the main legal structure for warfare. However, these rules were built for human decision-making, not machine autonomy. As AWS become more advanced, the gap between law and technology becomes clearer. The main concern is not only whether these systems are legal, but whether current laws are strong enough to handle situations where machines take critical battlefield decisions without direct human control.

Major Legal Challenges:

The first major legal challenge of Autonomous Weapons Systems (AWS) is **accountability**. In traditional warfare, it is usually clear who is responsible for unlawful acts: the soldier who acted or the commander who ordered it. However, AWS complicate this structure because decisions are partly or fully made by machines. If an autonomous system causes unlawful harm, it becomes difficult to decide whether responsibility lies with the programmer, the military commander, or the state itself. Schmitt (2017) explains that this “diffusion of responsibility” is one of the most serious legal gaps created by autonomous systems, because international law depends on clear attribution of responsibility for violations.

The second challenge is **compliance with International Humanitarian Law (IHL)**, especially the principles of distinction and proportionality. AWS are expected to identify combatants and civilians and avoid excessive harm, but this is extremely difficult in real combat environments. As Sparrow (2007) argues, machines lack human judgment and moral understanding, which makes it questionable whether they can reliably apply legal rules that depend on context and interpretation. In complex battlefield situations, even small errors in identification can lead to serious violations of IHL, raising doubts about whether fully autonomous systems can ever truly meet legal standards.

The third issue is **meaningful human control**, which has become a central idea in global debates on AWS. It refers to the requirement that humans should retain real control over decisions involving the use of force. However, there is no clear legal definition of what “meaningful” control actually means. According to Asaro (2012), this concept remains legally vague, which makes it difficult for states to apply it in practice. Without a clear standard, different countries may interpret human control differently, weakening the consistency of international legal regulation.

The fourth challenge is **unpredictability and reliability** of autonomous systems. AWS often depend on machine learning algorithms that can change over time based on data inputs. This makes their behaviour difficult to fully predict, especially in unfamiliar or rapidly changing environments. Sharkey (2019) notes that such unpredictability raises serious concerns about safety and legal compliance because commanders cannot always know how the system will behave in real situations. This uncertainty directly affects trust in AWS and

creates a legal problem, since international law assumes that weapons behave in a predictable and controllable way.

International Response:

The international response to Autonomous Weapons Systems (AWS) has mainly developed through discussions within the United Nations system. These discussions focus on whether existing international law is sufficient or whether new binding rules are needed. Within the UN framework, states and experts have repeatedly raised concerns about the ethical and legal implications of allowing machines to make life-and-death decisions. The United Nations has not yet agreed on a final treaty, but it continues to provide a platform for ongoing dialogue and negotiation on how to regulate such technologies in armed conflict.

A key forum for these discussions is the Convention on Certain Conventional Weapons. This convention has hosted formal meetings and expert groups specifically focused on lethal autonomous weapons systems. According to Boulanin and Verbruggen (2017), the CCW process is important because it allows states to discuss regulation in a structured way, even though it has not yet produced a legally binding agreement on AWS. One of the main ideas discussed in this forum is the need for “meaningful human control” over weapon systems, although states still disagree on how this should be defined and applied in practice.

State positions on AWS remain divided. Some countries support a complete ban on fully autonomous weapons, arguing that they cannot comply with international humanitarian law. Others prefer regulation instead of prohibition, believing that such technologies can still be used responsibly if properly controlled. A third group of states has taken a more cautious position, suggesting that existing international law is sufficient and that no new legal instrument is needed. As noted by Horowitz (2016), these differences reflect broader disagreements about military innovation, ethics, and security priorities. Because of this lack of consensus, global regulation of AWS is still incomplete and evolving.

Gaps and Need for Regulation:

The first major gap in regulating Autonomous Weapons Systems (AWS) is the absence of a specific international treaty dedicated to them. At present, there is no single binding global law that directly defines, restricts, or bans AWS. Instead, states rely on general rules of International Humanitarian Law (IHL). However, these rules were not written for technologies that can select and attack targets on their own. Because of this, there is no clear legal agreement on what level of autonomy is acceptable, or where the legal boundary should be set. This lack of a specific treaty creates uncertainty in global governance of these systems.

The second issue is the limits of existing legal frameworks. Instruments like the Geneva Conventions and Additional Protocol I provide important rules for armed conflict, but they are based on human decision-making in war. Scholars such as Schmitt (2018) explain that these laws can guide general conduct, but they struggle to address problems created by machine-based targeting and decision-making. For example, rules like distinction and proportionality are difficult to apply when an algorithm is making rapid battlefield decisions without human judgment. This shows that existing law has a structural gap when dealing with autonomous systems.

Because of these limitations, there is a strong need for clearer norms and stronger regulation. Many experts argue that the international community should develop specific rules for AWS, especially on issues like human control, accountability, and acceptable levels of autonomy. As Heyns (2017) notes, clear global standards are necessary to ensure that new technologies do not weaken existing protections under humanitarian law. Without agreed norms, different countries may develop and use AWS in very different ways, which can increase risks in future conflicts. Therefore, clearer international regulation is needed to ensure both legal clarity and responsible use of these systems.

Some Needs for Regulatory AWS:

The fast growth of Autonomous Weapons Systems (AWS) shows that current international laws are not enough to properly control them. These weapons can make decisions on their own, sometimes faster than humans can react. Because of this, there is a clear need for new and specific international rules. These rules should explain how much control humans must keep and how these systems can be safely used in war. Without proper regulation, different countries may follow different standards, which can lead to confusion and higher risks during conflict.

There is also a need to make sure that humans remain responsible for all important decisions in war. Laws should clearly say that machines cannot fully replace human judgment in matters of life and death. International discussions under the Convention on Certain Conventional Weapons show that countries are still debating this issue, but no final agreement has been reached. Because of this delay, it is important to develop clear and simple global rules so that technology does not move ahead of law and basic humanitarian principles are still protected.

Conclusion:

In conclusion, Autonomous Weapons Systems (AWS) create serious legal challenges because existing international laws were made for situations where humans always control weapons. Today, issues like accountability, human control, and compliance with International Humanitarian Law are not fully clear when machines start making decisions on their own. This creates a gap between modern military technology and current legal rules, making it difficult to apply laws like the Geneva Conventions in a complete and effective way.

At the same time, international discussions are still ongoing, but no final agreement has been reached on how to regulate AWS. Different countries have different views, which slow down progress. Overall, the study shows that stronger and clearer global rules are needed so that human responsibility is not lost and the basic principles of war law are still protected in future conflicts.

References:

1. Asaro, P. (2012). On banning autonomous weapon systems: Human rights, automation, and the dehumanization of lethal decision-making. *International Review of the Red Cross*, 94(886), 687–709.
2. Bajpai, G. S. (2021). *Human rights and international humanitarian law: Contemporary challenges*. Eastern Book Company.
3. Bhansali, S. R. (2020). *International law in changing warfare scenarios*. Indian Journal of International Law.
4. Boulanin, V., & Verbruggen, M. (2017). *Mapping the development of autonomy in weapon systems*. Stockholm International Peace Research Institute (SIPRI).
5. Heyns, C. (2017). Autonomous weapons in armed conflict and the right to a dignified life: An African perspective. *South African Journal on Human Rights*, 32(1), 46–71.
6. Horowitz, M. C. (2016). The ethics and morality of robotic warfare: Assessing the debate over autonomous weapons. *Daedalus*, 145(4), 25–36.
7. Lele, A. (2022). *Emerging technologies and national security*. Pentagon Press.
8. Malik, R., & Chakka, B. (2022). *Autonomous weapon systems: Probing the legality*. Journal of Legal Studies.
9. Saxena, V. K. (2019). *Future warfare and autonomous systems in South Asia*. Institute for Defence Studies publications.
10. Schmitt, M. N. (2017). Autonomous weapon systems and international humanitarian law: A response to the critics. *Harvard National Security Journal Features*.
11. Sharkey, N. (2019). Autonomous weapons systems, killer robots and human control. *Ethics and Information Technology*, 21(2), 145–151.
12. Singh, U. (2019). *Artificial intelligence and future warfare: Implications for India*. Institute for Defence Studies and Analyses.
13. Sparrow, R. (2007). Killer robots. *Journal of Applied Philosophy*, 24(1), 62–77.
14. Subramaniam, A. (2020). *India's national security: A reader*. Oxford University Press.