FROM GENEVA TO BATTLEFIELD: THE LEGAL & ETHICAL FAULT LINES OF AUTONOMOUS WARFARE SYSTEMS

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ABSTRACT

Technological marvels have touched every corner of our lives and have provided humanity with enormous opportunities. The recent decades have given rise to modern technologies of warfare which have led to unprecedented changes and means of conduction of the present warfare which has also led to an international disruption or change in power. Warfare technologies, once a part of science fiction, have become a reality, and they have the potential to cause catastrophes. An autonomous weapon system is one of the new technological dimensions of warfare, which involves selection, target profiling and striking without human intervention, providing an immense advantage in combat. Increasing degree of autonomy and rapid rise in its usage by various armies have raised several legal, ethical issues and challenges in the field of International Humanitarian Law. Risk of harm to the lives of civilians and combatants, applicability of the rules of hostilities to the armed conflicts involving autonomous weapon systems, involvement of non-state elements in the armed conflict demands a serious relook at the laws of armed conflict. To ensure the protection of civilians, compliance with laws related to armed conflict and for accountability of state as well as non-state elements; it is imperative to establish internationally agreed limits for usage & deployment of autonomous weapon system. The aim of this study is to understand the new technological dimensions of warfare through autonomous weapon system by various elements in 21st century, elevation of autonomous weaponry device-based attacks to a full-fledged lethal warfare and to check the viability of existing legal regime to discuss the legal and ethical concerns arising out of such warfare.

Keywords: Autonomous weapon system, Laws related to armed conflict, Lethal Autonomous Weapon System, International Humanitarian Law

"*Science gathers knowledge faster than society gathers wisdom*"

-Isaac Amino

1. Introduction:

Technology has revolutionized every corner of our life and has provided us with countless opportunities. Modern technologies of warfare have led to unprecedented changes and means of conduction of the present warfare which has also led to an international disruption or change in power. Warfare technologies-once a part of science fiction, have become a reality and they have a potential to cause catastrophes. Wars are becoming more and more lethal and even unpredictable in terms of method of combat, warfare techniques and the outcomes with increasing usage of technology. Autonomous weapon system is one such area of grave concern where Artificial Intelligence is used for critical functions with minimum or zero human intervention to achieve precision[1]. Technological evolution regarding unmanned aerial vehicles has been very fast since last two decades, but has simultaneously triggered a vigorous public debate over the legal & ethical concerns. The debate is largely focused on the legality of targeted killing and the increasing deployments of Unmanned Aerial Vehicle (hereinafter referred to as UAVs) in armed conflicts in Afghanistan, Pakistan, Palestine, Yemen, Iraq and such similar conflicts. United Nations in the Seventy Ninth Session of the General Assembly in 2024 has passed a resolution 78/241 on lethal Autonomous Weapon System(hereinafter referred to as LAWS) thereby stressing upon an urgent need to address the challenges and concerns of autonomous weapon systems[2]. Risks of arms race, proliferation by non-state actors and challenges of unpredictability, lethality and indiscriminate effect are highlighted in the general assembly report[3].

It is often witnessed that the technological advances generally outpace the generation of rules pertaining to particular social phenomena. International humanitarian law is a part of the similar trend with several technological breakthroughs in warfare are unleashed everyday. Right from the beginning, autonomous weapons and AWS-based warfare have created challenges to fundamental assumptions of the International Humanitarian Law (hereinafter

[1] International Committee of the Red Cross, what you need to know about Autonomous Weapons, ICRC, [May 12, 2021], Available at- https://www.icrc.org/en/document/what-you-need-know-about-autonomous-weapons (Last visited on 30th April 2025).
[2] UNGA Resolution 78/241, Lethal Autonomous Weapons, A/RES/78/241 (Dec 22, 2023).
[3] Ibid.

referred to as IHL). The prospective introduction of autonomous weapon systems and the ethical-legal concerns expressed at various international levels have posed a similar challenge in this regard. In its report in 2011, International Committee of Red Cross (hereinafter referred to as ICRC) has raised a concern about autonomous weapon system for the first time and appealed to the States to consider ethical, legal and ethical concerns before the weapon system is deployed on the battlefields[4]. The use of lethal autonomous weapon system has a potential to jeopardize the enforceability of principles of International Humanitarian Law. The global debate has been centered around the need of regulation of lethal autonomous weapon system (LAWS); however, the regulation of the technology in itself is a daunting task. It is therefore crucial to understand key aspects of Autonomous Weapons along with the efforts related to its regulation.

2. Autonomous Weapon System:

It was early 2000 since when the debate with respect to the Autonomous Weapon System has started with several scholars of international law have started expressing concerns regarding legal & ethical implications and its implications on the IHL. The debate was deeply polarized with certain expert groups appealing for a cautious approach towards the inevitable deployment of AWS in warfare; while others along with civil society organizations, NGOs called for a complete ban. With a report on 'Killer Robots' in 2012, Human Rights Watch and then the concerned stakeholders including ICRC, UN institute on Disarmament Research, UN Convention on Certain Conventional Weapons (hereinafter referred to as UNCCW) along with many expert groups have revamped the debate on AWS. The bottom-line is whether the artificial intelligence mechanism and its potential of self-learning can abide the fundamental principles of IHL or not. Throughout the last decade, the conflicting interests have highlighted one common factor of a lack of universal definition of AWS. It is therefore important to delve into the definitions of AWS along with its subset-LAWS provided by key international stakeholders and States for our understanding.

The Autonomous Weapon System (AWS) is defined by International Red Cross Society (ICRC), as any weapon system that involves autonomy in its critical functions with minimal or

[4] International Committee of the Red Cross, *International Humanitarian Law and the Challenges of Contemporary Armed Conflicts*, Report for the 31st Int'l Conf. of the Red Cross & Red Crescent, Geneva, Switz., Nov. 28–Dec. 1, 2011 (2011), https://www.icrc.org/en/doc/assets/files/red-cross-crescent-movement/31st-international-conference/31-int-conference-ihl-challenges-report-11-5-1-2-en.pdf.

no human intervention[5]. The autonomy in the weapon system includes search, selection, tracking, detecting, damaging, destroying targets through sensors, computer networks and further improvisation with the help of Artificial Intelligence and Machine Learning. Depending upon the level of autonomy, the degree of human control varies.

Department of Defense, US defines Autonomous Weapon System as a system which, after activation can select and operate without further human intervention. The autonomous weapon system has varying levels of human intervention including a human-supervised weapon system capable of operating, selecting targets post activation[6].

Unite Kingdom defines autonomous system that is well capable to understand high-level intent & direction and can take appropriate actions accordingly[7]. UK's Group of Governmental Experts to CCW (Convention on Certain Conventional Weapons) defines LAWS (Lethal Autonomous Weapon System) as the one, due to high level intent, is capable of understanding, interpreting the data with sophisticated perception of the environment to arrive at a precise decision[8]. The system is equipped to decide whether to continue the mission, extent of force or whether to abort the same even without a human oversight. The group of governmental experts highlight a grave concern of 'unpredictability' where it is tough to determine whether the system would follow a defined state of parameters or not.[9]

Germany categorically keeps human intervention away from Autonomous Weapon System from decision making. The emerging technologies, according to Germany are deeply integrated with LAWS to be employed in full compliance with International Law[10]. German definition

[5] International Committee of the Red Cross, *What you need to know about Autonomous Weapons*, ICRC, [May 12, 2021], Available at- https://www.icrc.org/en/document/what-you-need-know-about-autonomous-weapons
[6] US Department of Defense, Dir.3000.09, Autonomy in Weapon System, [Jan 25, 2023], https://media.defense.gov/2023/Jan/25/2003149928/-1/-1/0/DOD-DIRECTIVE-3000.09-AUTONOMY-IN-WEAPON-SYSTEMS.PDF
[7] Convention on Certain Conventional Weapons. *Report of the 2019 Session of the Group of Governmental Experts on Emerging Technologies in the Area of Lethal Autonomous Weapons Systems*. U.N. Doc. CCW/GGE.1/2019/3 (2019), https://undocs.org/pdf?symbol=en/CCW/GGE.1/2019/3. (Last visited on 30th April 2025)
[8] ibid
[9] Mariarosaria Taddeo & Alexander Blanchard, *A Comparative Analysis of the Definitions of Autonomous Weapons Systems*, 28 Science. & Engineering Ethics 37 (2022), https://doi.org/10.1007/s11948-022-00392-3. (Last visited on 2nd May 2025)
[10] Federal Foreign Office, *German Commentary on Operationalizing All Eleven Guiding Principles at a National Level as Requested by the Chair of the 2020 Group of Governmental Experts on Emerging Technologies in the Area of Lethal Autonomous Weapons Systems within the Convention on Certain Conventional Weapons* (2020), https://documents.unoda.org/wp-content/uploads/2020/07/20200626-Germany.pdf. (Last visited on 2nd May 2025)

underlines the fact that Autonomous Weapon cannot and should not work in a manner that constitutes violation of international law.

Switzerland says a weapon system carrying out tasks with complete or partial human interference within the guided framework of International Humanitarian Law[11]. Switzerland's policy constraints Autonomous Weapons to be working within the framework of IHL and has no space for those potentially violating and challenging the principles of IHL. Similar definition is seen in the policies of Norway and Netherlands.

According to France, LAWS is such a futuristic Lethal System where human supervision is completely absent right from validation to further command. The system is self-intelligent to deploy lethal devices from its platform without any military chain of command[12]. France indicates the risk of unpredictability, uncertainty and consequent IHL violations[13].

NATO in the year 2020 has defined Autonomous Systems as the one with acquired knowledge & situational vulnerabilities can execute a desired target within a designed parameters[14]. However, it adds that unpredictable course of action is a major risk factor with evolving AI[15].

China defines Autonomous weapons with five different characteristics- autonomy in operation without any human intervention, lethality, no termination after initiation and indiscriminate effect alongside evolving AI[16]. China has also highlighted the potential threat with evolving artificial intelligence and machine learning capabilities of the weapons to an extent of exceeding human expectations. It appears that China's focus is on full autonomy of the weapons.

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[11] Switzerland, *Informal Working Paper Submitted by Switzerland: Towards a "Compliance-Based" Approach to LAWS*, Informal Meeting of Experts on Lethal Autonomous Weapons Systems, Geneva (2016), https://www.reachingcriticalwill.org/images/documents/Disarmament-fora/ccw/2016/meeting-experts-laws/documents/Switzerland-compliance.pdf. (Last visited on 2nd May 2025)

[12] République Française, *Working Paper of France: "Characterization of a LAWS"*, U.N. Meeting of Experts on Lethal Autonomous Weapons Systems (2016), https://unog.ch/80256EDD006B8954/(httpAssets)/5FD844883B46FEACC1257F8F00401FF6/$file/2016_LAWSMX_CountryPaper_France+CharacterizationofaLAWS.pdf. (Last visited on 2nd May 2025).

[13] Ibid.

[14] NATO. (2020). AAP-06 Edition 2020: NATO glossary of terms and definitions. NATO Standardization Office

[15] ibid

[16] China, *Position Paper Submitted by China*, U.N. Doc. CCW/GGE.1/2018/WP.7 (Apr. 11, 2018), https://unog.ch/80256EDD006B8954/(httpAssets)/E42AE83BDB3525D0C125826C0040B262/$file/CCW_GGE.1_2018_WP.7.pdf. (Last visited on 2nd May 2025).

Israel keeps the futuristic development at bay from the contemporary developments and state that autonomous weapons system shall be working under human decision making only[17]. Any self-learning capability and complete autonomy in the operation of the weapon system is a matter of fiction according to Israel.

Closer Analysis of the definition reveal that autonomous weapons with cognitive learning capabilities is accepted by the States to be a futuristic development. The definitions in their respective policies are centered around the high level intent and generative AI as a necessary precondition for minimizing or almost eliminating human interference which as of now is not the immediate future. With respect to lethality component, States have varied understandings. States such as China and France have specific focus on lethality as the purpose of deployment while States such as Norway, US, Switzerland refers to multiplicity of the purposes[18]. States such as Germany, UK have autonomy as a significant factor in defining the AWS[19]. However, all the States and experts have expressed a grave concern of unpredictability and the consequent heightened humanitarian concerns.

3. Historical evolution of the Autonomous Weapon System:

The idea of developing smart weapons arose out of the requirements of targeted killings and reducing the unintended or collateral damages. The idea of 'armed conflict' vis-a-vis a full scale war also acts as a limitation on the usage of conventional weapons. Rapid developments in the field of Artificial Intelligence provided a further stimulus to the development of autonomous weapon system. Autonomy in the weapon was there since the beginning of 20th century and we do find instances of usage of autonomy in patrolling, detecting or even guided bombs in the World War. Germany had arguably used the first ever radio-controlled drone against an Italian vessel in the World War II[20]. USA then took a lead in the development of Artificial Intelligence based weapons and the technology of guided unmanned aerial vehicles which was witnessed in Vietnam wars, Middle-east conflicts. By the end of 20th century,

[17] Yaron, M. (2018). Statement by Maya Yaron to the convention on certain conventional weapons (CCW) GGE on lethal autonomous weapons systems (LAWS). In: Geneva: Permanent mission of Israel to the UN. https://www.unog.ch/80256EDD006B8954/(httpAssets)/990162020E17A5C9C12582720 057E720/$fle/2018_LAWS6b_Israel.pdf. (Last visited on 2nd May 2025).

[18] Mariarosaria Taddeo & Alexander Blanchard, *A Comparative Analysis of the Definitions of Autonomous Weapons Systems*, 28 Sci. & Eng'g Ethics 37 (2022), https://doi.org/10.1007/s11948-022-00392-3 (Last visited on 2nd May, 2025)

[19] ibid

[20] Ty McCormick, Lethal Autonomy: A Short History, Foreign Policy (Jan 24, 2014), Available at https://foreignpolicy.com/2014/01/24/lethal-autonomy-a-short-history (Last visited on 30th April, 2025)

Pentagon took a significant lead in the development of what was commonly referred to as 'killer robots' and with increasing autonomy in tracking & targeting, they became more & more lethal giving a great strategic advantage in 'war against terror'. The trend was soon followed by Many countries including U.K, South Korea, Russia, Israel etc.

The focus of defense policies has been on enhancing the success probability of autonomous weapon system and throughout it required a human judgment when it comes to lethal weapon system. But at the same time, researchers, and rights activists in various parts of the world have started flagging concerns over potential hazards of AI-Based weapon systems. In September 2013, coalition of NGOs and civil society organizations across the globe including Human Rights Watch have started a campaign named 'Stop Killer Robots' to warn the world of the hazards and consequences of complete autonomy in the lethal weapon systems[21]. Founders of major AI and Robotics companies across 26 different countries in the world have warned CCW in an open letter in 2017 about a potential 'pandora box' with increasing development of AI for development of LAWS[22]. Christopher Heyns, UN's Special Rapporteur on extra-judicial & arbitrary executions, in September 2013, called for a moratorium on the development and deployment of autonomous robots in conflict zones due to its inherent risk of collateral damage, lack of distinction and lethality[23]. He also urged the States to reconsider whether existing legal norms of international law are sufficient to govern the usage of autonomous weapon system or not[24]. With enhanced automation and increased precision, autonomous weapon systems are raising complex strategic, legal and ethical issues.

4. Notable instances and defense policy initiatives:

Defense policies of various States have been outlining their specific commitment to the development of Autonomous Weapon Systems and its deployments in the conflict zones. The Aegis air-defense system capable of detecting and targeting hostile aircraft, the RQ-1 Drones capable of selecting and striking the targets with minimal human intervention, project Maven-

[21] Stop Killer Robots-Less autonomy, More Humanity, https://www.stopkillerrobots.org/ (Last visited 2nd May 2025)

[22] Noel Sharkey, *Autonomous Weapons and Human Supervisory Control*, Expert Meeting: Autonomous Weapon Systems — Technical, Military, Legal and Humanitarian Aspects, Int'l Comm. of the Red Cross 29 (2014).

[23] Press Release, Office of the U.N. High Commissioner for Human Rights, *UN Human Rights Expert Calls for Moratorium on Lethal Autonomous Robots* (May 30, 2013), https://www.ohchr.org/en/press-releases/2013/05/un-human-rights-expert-calls-moratorium-lethal-autonomous-robots. (Last visited on 30th April, 2025)

[24] ibid

AI based program by Pentagone are the instances where USA is eying for rapid expansion of AI in missions and warfare[25]. China has a massive state-run AI research program for defense requirements. French army is reportedly testing AI powered robots to assist and even take control in combat without human intervention[26]

A conflict between Azerbaijaan and Armenia in Nagorno-Karabakh region in 2020 witnessed the use of 'Karikaze drones'- high level autonomous system which can detect and further destroy targets[27]. In the tough terrains of Caucasus mountain, the autonomous systems provided a significant strategic advantage to the modern armies. Several military experts started advocating for further development of autonomous weapon system due to its tactical advantage in the stressed and dangerous battlefield.

On 27th November 2022, Mohsin Fakrizadeh, top nuclear scientist from Iran was killed with the help of Artificial Intelligence powered satellite-controlled machine gun[28]. The gun was remotely operated and was powered with Artificial Intelligence to select target through facial recognition, deploy specific force to inflict desired outcome and minimum or zero damage to objects and humans around the target. The scientist was killed with the AI powered machine gun without any human operator on the crime scene and people sitting in the same car as he was into, were left unharmed[29]. Concerns of usage of autonomous weapon systems have come to the forefront once again with this recent killing. AI based systems were reported to be deployed in Ukraine-Russia war, Gaza conflicts to identify targets, deliver explosives and to carry surveillance. Non-State actors such as Hamas, Hezbollah have reportedly used drones for targeted attacks. Deployment of Artificial Intelligence in warfare is increasing rapidly; but, in A full-fledged AI-integrated weapon system without any human control or the fear of 'killer robots' on an indiscriminate killing spree has been witnessed as most of the AI based systems on the battlefield are working with significant human intervention in a predetermined

[25] Matt Stroud, The Pentagone is getting serious about AI Weapons, (Apr. 12, 2018), https://www.theverge.com/2018/4/12/17229150/pentagon-project-maven-ai-google-war-military (Last visited o2nd May 2025)
[26] Vivienne Machi, *French Army Honing Requirements for Future 'Vulcain' Robotic Capability*, Def. News (June 17, 2022), https://www.defensenews.com/global/europe/2022/06/17/french-army-honing-requirements-for-future-vulcain-robotic-capability/ (Last visited 2nd May 2025)
[27] Yordan Gunawan et al., *Command Responsibility of Autonomous Weapons Under International Humanitarian Law*, 8 Cogent Soc. Scis. 2139906 (2022), https://doi.org/10.1080/23311886.2022.2139906. (Last visited 2nd May 2025)
[28] Mohsen Fakhrizadeh: 'Machine-gun with AI' Used to Kill Iran Scientist*, BBC News (Dec. 7, 2020),* https://www.bbc.com/news/world-middle-east-55214359 (Last visited on 4th May, 2025)
[29] ibid

circumstance. However, weapon systems development is towards the direction of 'increasing autonomy' and 'reducing human control' and hence the skepticism around its humanitarian concerns is also quite real.

5. Legal concerns of Autonomous Weapon System and IHL:

With enhanced machine learning capabilities, the technology of AWS would gradually and even completely keep humans out of the loop right from the acts of selection, engagement to the targets to the final decision of strike. The decision of life & death would be ceded to the machines raising profound issues already. The collective public conscience, as seen from the campaigns such as 'Stop Killer Robots' it is evident that a weapon system with minimal to no human intervention in the critical decisions raises critical legal & ethical concerns.

The legal challenges that AWS poses, is of legality of killings through autonomous aerial vehicles, attributing individual criminal responsibility, proportionality, ability of distinctive responsibility for state or non-state actors and compliance with the testing requirement with existing principles of International Humanitarian Law, quite apart from ethical and political challenges. International humanitarian law is characterized by a persistent dilemma between two competing facets: military necessity on one and the mandate of humanitarian prospect of combat on the other side. There is considerable disagreement over an extent to which military necessity can go alongside the humane expectations of warfare.

Law of armed conflict, as per its conventional understanding, protects civilians in conventional armed conflicts. Geneva Protocol and Additional Protocol 1 seeks to protect civilians as well as objects in conventional combat. Targeted killings made with the help of Artificial Intelligence powered Unmanned vehicles are uncertain to be brought within the purview of Additional Protocol 1 for majorly two reasons- definition of war or warfare does not specifically cover Artificial Intelligence-powered attacks/armed conflicts/wars and other being the identification that targeted killings are done through AI-powered weapons. The established principles of International Humanitarian Law first need a relook in light of increasing usage and deployment of AI powered systems and to categorically assess the protection of civilians with civilian objects.

5.1 Principle of Distinction:

Article 48 of the Additional Protocol to Geneva Convention is a specific provision with respect

to the principle of distinction. In a combat. The attacker should distinguish amongst combatants, civilians and objects based on their military quality and those of a civilian nature[30]. The principle remains applicable in armed conflicts of international as well as non-international n nature. Difficulties arise when a target possesses dual characteristics- civilian as well as military. There are infrastructure and instruments having a military value, but are lifelines for civilian population too. In such cases, indiscriminate attacks may lead to large scale damages to civilian population and civilian infrastructure. Protocol additional to the Geneva Convention prohibits attacks causing indirect impact on the civilians, civilian objects, monuments including certain warfare methods which are inherently indiscriminate[31]. In such complex scenario, where human judgment itself needs multiple considerations simultaneously; expecting the same sanity from an AI-powered weapons to balance necessity with principle of distinction is a work of fiction.

Based on pre-programmed characteristics and enhanced machine learning, there are AI-based weapons capable of identifying nature of a target and accordingly launch attack. AI based machines equipped with sensors, cameras, radars are way quicker than humans to observe & identify targets making it easier to then take a decision based on careful distinction[32]. The immense potential of machine learning and its AI-based skillset of observation, data collection would be crucial in dangerous areas or battlefields with tough terrains[33]. Despite a significant progress in machine learning, capability of a machine to make a distinction on and off the battlefield is limited and is not at par with humans[34]. Circumstantial facets and contextual considerations are better handled by humans and hence autonomous weapon systems as of now are not able to enforce the principle of distinction in its true sense[35]. The fear of indiscriminate attack in the armed conflict is therefore an underlying concern until the technology reaches full potential of distinction assessment.

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[30] Protocol Additional to Geneva Convention of 1949 and relating to the Protection of Victims of International Armed Conflict, June 1977, Article 48

[31] Supra note 28, page 11.

[32] Winter, Elliot. The Compatibility of Autonomous Weapons with the Principles of International Humanitarian Law. *27* Journal of Conflict & Security Law *1 (*2022). https://doi.org/10.1093/jcsl/krac001. (Last visited on 7th May 2025).

[33] Ibid.

[34] Müller, Vincent C., and Nick Bostrom. "Future Progress in Artificial Intelligence: A Survey of Expert Opinion." In *Fundamental Issues of Artificial Intelligence*, edited by Vincent C. Müller, 555–572. Synthese Library, vol. 376. Cham: Springer, 2016. https://doi.org/10.1007/978-3-319-26485-1_33. (Last visited on 10th May 2025).

[35] Ibid.

5.2 Principle of proportionality:

The principle of proportionality states that damage to civilian objects must be proportionate in combat and not in excess to the military advantage anticipated. Under Additional Protocol I, has codified the principle of proportionality thereby prohibiting attacks causing injuries, loss or damage to the civilian life, civilian objects which is in excess to the direct military advance anticipated[36]. The principle is a corollary to the principle of distinction where, even though the distinction between civilian and non-civilian objects is not possible or sometimes unavoidable; the incidental harm should be limited and not be disproportionate.

Ambiguity as to what constitutes 'proportionate harm' and what is disproportionate harm is often exploited by the technological advancements in the area of weapon system and autonomous weapon system is not free from that. Lack of clarity and contextual factors along with situational facets would ultimately define what is an 'incidental harm' to the civilian and accordingly it could be weighed with the military attack based on the claim of 'proportionality'. Proportionality principle therefore requires multidimensional human judgment and, in that light, the autonomous weapon technology is at a very nascent stage of development. The AI programing in the autonomous weapon system has to be provided with concrete data regarding permissible limit of causalities & damage, circumstantial facets and the category of attack alongside its outcome. The systems have to be able to react and modify themselves as per the changing circumstances. For autonomous weapon systems to work without any human intervention, this is a daunting task and it can work only in a narrow, predictable set-up. Additionally, with the 'generative learning capacity' of the machines; leaving or delegating the decision to kill to a machine is ethically questionable. In non-international conflicts, the very identification of 'civilians', 'combatants' is often tough and hence applying the belligerent nexus by the AWS to the 'incidental harm' part is an arduous task[37].

The unpredictability concern in the AWS and lack of common consensus underline the need

[36] Protocol Additional to Geneva Convention of 1949 and Relating to Protection of Victims of International Armed Conflict (Protocol I), Article 51(5)(b) of June 1977

[37] Martin, Craig. Autonomous Weapons Systems and Proportionality: The Need for Regulation, Case Western Reserve Journal of International Law 255 (2025). https://scholarlycommons.law.case.edu/jil/vol57/iss1/21. (Last visited on 2nd May 2025)

of a revamped approach to the principle of proportionality considering AWS[38].

5.3 State Responsibility and Accountability in the Age of Autonomous Weapons:

Experts of International Law generally agree that it is impossible to hold the Autonomous Weapon system accountable, irrespective as to how sophisticated such weapons might become in the future[39]. AWS will never be a responsible moral agent as artificial intelligence systems do not have a foundation of moral agency or otherwise[40]. Machine is not a legal entity to bear accountability.

International Humanitarian law does not mandate weapons to be 'ethical' or 'humane'; but under the established principles of international law, States must cautiously evaluate & decide whether the weapon system's desired consequences are in compliance with international law[41]. International Humanitarian law focuses on means and methods of warfare to be in compliance with the fundamental principles of laws of war. Article 36 of Additional Protocol I also requires States to ensure that effect of the weapons used in conflicts is in line with principles of international law[42]. State responsibility arises when the State action violates the principle of international law. In order to impose command responsibility upon States for their deployment and use of AWS, the ambiguity with respect to what constitutes a legitimate use of AWS according to IHL and what does not must be eliminated with consensus[43]. States are subjectively and objectively accountable for actions which can reasonably be attributed to them. For command responsibility of the outcomes, predictability and consequent anticipation is a must to establish a reasonable nexus. Issues with AWS where a decision would be delegated to a machine with no humans in the loop and unpredictability concerns which may jeopardize the established principles of IHL; obscures the State responsibility in the age of AWS. With

[38] Winter, Elliot. *Autonomous Weapons in Humanitarian Law: Understanding the Technology, Its Compliance with the Principle of Proportionality and the Role of Utilitarianism*. 6 Groningen Journal of International Law 1 (2018). https://doi.org/10.21827/5b51d56abd19e. (Last visited on 2nd May 2025)
[39] Noel E. Sharkey, *The Evitability of Autonomous Robot Warfare*, 94 Int'l Rev. Red Cross 787, 790 (2012), https://doi.org/10.1017/S1816383112000732 (Last visited 2nd May 2025)
[40] ibid
[41] Gunawan Yordan, M. H Olawi and Ors, Command Responsibility of Autonomous Weapons under International Humanitarian Law, 8 Cogent Social Sciences, Available at https://doi.org/10.1080/23311886.2022.2139906 (Last visited 2nd May 2025)
[42] Protocol Additional to Geneva Convention of 1949 and relating to the Protection of Victims of International Armed Conflict, June 1977, Article 36
[43] Supra note 40, page 14.

lethality in AWS and vicious use of the same by non-State actors; accountability element continues to face new challenges.

Further, if Autonomous Weapons are used for committing International Crimes like war crimes or genocide, the controversial aspect would be of men's rea. Article 30 specifies that, unless otherwise provided, the material elements of all crimes must be 'committed with intent and knowledge. The deployment and usage of autonomous weapons cannot be ascertained to an individual to be virtually 'intending' the consequences. The method of design, operation, target selection, deployment, if done with the help of machine learning, ensuring accountability to any human could be a challenging task.

Post Hoc judicial accountability is a mechanisms to enforce principles of International Humanitarian Law and of International Criminal Law; but the risk of harm due to ambiguous accountability norms still persist[44]. The principles of International Humanitarian Law alongside the International Criminal Law must undertake a relook in light of the repercussions of the AI based warfare from the ethico-legal perspective.

6. The Ethical Dilemma of Autonomous Weapon System:

With a report 'A case against killer Robots' in November 2012, Human Rights Watch reignited the debate on legal and ethical fault lines the lethal autonomous weapon system may face in the immediate future[45]. The report and the consequent campaign by civil society groups questioned the very ethics of 'delegating a decision of life & death' to a machine and taking away humans from the loop thereby. The definitions adopted by States and other international stakeholders indicate a common consensus that the AWS must comply with fundamental principles of IHL alongside expressing unpredictability as a grave concern.

6.1 Ethics of 'necessity'

Military necessity and humanity are fundamental principles of humanitarian laws which form corollary to the principle of proportionality. The principle thereby elucidates warfare measures which are 'permissible' to achieve the legitimate military objectives and measures which are

[44] Kenneth Anderson and Matthew Waxman, 'Law and Ethics of Robot Soldiers', Policy Review (2012)
[45] Stop Killer Robots-Less autonomy, More Humanity, https://www.stopkillerrobots.org/ (Last visited 2nd May 2025)

not under IHL[46]. Military necessity aims to strike a balance between humanitarian concerns and 'necessitated measures' to achieve military objective. It permits effective measures against legitimate military target without any scope of errors[47]. The sheer agility, persistence, range, accuracy and speed of response the AI-systems offers, it quite naturally outperforms human judgment. The crucial advantages of enhanced probability of success, reduced scope of errors and minimal scope for unwarranted damage that AWS powered army can derive, is hard to ignore and in fact this is a key reason for rapid investments of States in development of AWS. The flip side of the same is that the autonomous systems will be taking a decision of 'necessary force' based on uncertain and evolving dynamics. Autonomous Systems till now have worked in a defined environment with predictable circumstances. It will certainly lack the operational morality and humaneness which is instrumental in taking any final call of assault depending upon the changing dynamics of the battlefield[48]. The legal and ethical principles of international law indicate that the crucial decisions of 'life & death' 'necessity & proportionality of attack' must be taken by a prudent human commander thereby attributing the responsibility for violation is simpler.

6.2 Ethics of Humanity:

The principle of humanity aims at reducing the post-war sufferings and ensuring human dignity. A generalized understanding and experience of Autonomous Weapon Systems in the recent conflicts do suggest its deployment to have reduced unnecessary sufferings and minimized casualties; it could be too early to judge the same based on a limited understanding. The call of what is 'humane' is subjective and it should be decided on case-to-case basis for which a human judgment is required[49]. For an autonomous weapon system with even a high-level intent, lot of inputs of ethics, situational dynamics and circumstantial facets have to be provided for it to learn and even after that the 'humaneness' of the outcome cannot be guaranteed. For an AWS without any human in the loop, accountability of jeopardizing the humanity principle would be an addition into the existing legal challenges.

[46] Military Necessity, How does law protect in War?- online casebook, International Committee of Red Cross, Available at https://casebook.icrc.org/a_to_z/glossary/military-necessity (Last visited on 2nd May 2025).
[47] Andreas Wilia, Diajeng Wulang Christianti, The Use of Autonomous Weapon Systems in Armed Conflict: Legality and Challenges for Future Weapon Regulation, Padjadjaran Journal of International Law, Volume 3 Issue 2 (2019).
[48] David Brunstetter & Matthew Braun, The Implications of Drones on the Just War Tradition, 25 Ethics & International Affairs 337 (2011), https://doi.org/10.1017/S1816383112000732. (Last visited on 10th May 2025).
[49] Supra note 45, page 15

6.3 Unpredictability Concerns:

With the autonomous system technology being at a nascent stage of development, predicting its future course and further subjection of the same to weaponization or other legal and illegal usages is grey area. There is a common agreement amongst stakeholders in their definitions of AWS as to what is the minimum level of autonomy and consensus for a system to have a self-learning capability. Leaving the interlinked and complex decisions from identification, detection to targeting to be taken by machines with minimal or no human intervention is an ethical dilemma in itself[50]. Lack of universal definitions of AWS, absence of a common standard regarding a necessary human intervention in AWS and ambiguity or sometimes even a secret development of AWS systems by States further complicates the existing ethical concerns.

6.4 Arms race and threat to international stability:

Tactical, strategic and political advantage of autonomous weapon system as witnessed in several recent armed conflicts has triggered the race for proliferation for AWS. States such as USA, France, Iran, Russia etc. have already announced development of AWS in their defense policies; it has directly or indirectly triggered anxieties and consequently arms race[51]. With international community keeping nuclear, chemical, biological weapons in check through several international instruments; lack of specific regulations with respect to AWS leaves scope for jeopardizing the principles of IHL. The arms race and legitimate/illegitimate efforts to acquire AWS has exacerbated the risk to international stability and peace. Deployment of AWS in international crimes and the consequent command responsibility is a contested question under international law[52]. With 'humans-out-of-loop' system under LAWS and non-state actors vitiating the accountability as 'commanders'; ensuing the command responsibility is concerning facet[53].

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[50] Mariarosaria Taddeo & Alexander Blanchard, *A Comparative Analysis of the Definitions of Autonomous Weapons Systems*, 28 Sci. Eng. Ethics art. 37 (2022), https://doi.org/10.1007/s11948-022-00392-3. (Last visited on 10th May 2025).

[51] Elvira Rosert & Frank Sauer, *How (Not) to Stop the Killer Robots: A Comparative Analysis of Humanitarian Disarmament Campaign Strategies*, 42 Contemporary Security Policy.4 (2020), https://doi.org/10.1080/13523260.2020.1771508 (Last visited on 10th May 2025)

[52] Yordan Gunawan, Muhammad Aulawi, Rizaldy Angrivan and Tri Purto, *Command Responsibility of Autonomous Weapons under International Humanitarian Law*, 8 Cogent Soc. Sci. 2139906 (2022), https://doi.org/10.1080/23311886.2022.2139906. (Last visited 10th May 2025).

[53] Ibid.

Autonomous Weapon System hold immense potential to prove advantageous to the mankind at large. However, unchecked development of the AWS technology can further heighten the concerns and deepen the trust deficit. Therefore, bridging the legal-ethical gap is essential to build certain, predictable and consensus based universal regulatory framework within the scope of IHL.

7. Overview of Regulatory Framework

From calls of total ban to appeals of regulatory restrictions, the debate over autonomous weapon system's legal & ethical implications remains deeply polarized. Antonnio Gutteres, Secretary General of the United Nations and of the International Committee of Red Cross have appealed States to work upon a new treaty framework setting out specific rules and restrictions on AWS.

7.1 Missile Technology Control Regime (MTCR)

MTCR is a voluntary international instrument established in 1987 which discusses unmanned aerial vehicles (hereinafter referred to as UAVs) whereby further proliferation of UAVs with an intention of mass destruction is prohibited[54]. Thirty-four state parties have a network under the instrument through which they aim to protect export and trading of weapons of mass destruction including the UAVs. MTCR is not a legally binding instrument and it is more voluntary in nature. This inherent limitation of MTCR and acceptance by handful of states significantly reduce its global effectiveness[55].

7.2 Article 36 of Additional Protocol I

Article 36 of Protocol additional to the Geneva Convention 1949 is a futuristic facet whereby the high contracting parties are under the obligation to determine whether any kind of study, proliferation, development, adoption of new weapon system or methods of warfare is prohibited under any of the instruments of international law or international humanitarian law[56]**.** It is a self-declaration where a State must determine whether their defense developments

[54] Missile Technology Control Regime, Available at https://www.mtcr.info/en (Last visited on 10th May 2025)
[55] Noel E. Sharkey, *The Evitability of Autonomous Robot Warfare*, 94 International review of Red Cross 787 (2012), https://international-review.icrc.org/sites/default/files/irrc-886-sharkey.pdf. (Last visited on 10th May 2025).
[56] Protocol Additional to Geneva Convention of 1949 and relating to the Protection of Victims of International Armed Conflict, June 1977, Article 36.

or its impact incur a risk of violation of IHL. In the defense initiatives or AWS policies announced so far from the States side, any such determination has hardly been witnessed. Additionally, Autonomous Systems come within the domain of IHL regulations only when they are armed and hence the loophole and vagueness in application of article 36 can be exploited by States for rapid development of the autonomous weapon system[57].

7.3 UN Convention on Certain Conventional Weapons (UNCCW):

As a key instrument of IHL, the United Nations Convention on Certain Conventional Weapons (hereinafter referred to as UNCCW) aims to ban/restrict/regulate specific type of weapons with a potential to cause unjustifiable sufferings or causing indiscriminate damage to the civilians[58]. The most promising feature of the convention is that it is flexible in covering the new technologies of warfare. It has a framework convention with general operational provisions alongside certain substantive provisions annexed to it as protocols. The regime has structural flexibility to adopt to new protocols according to the contemporary requirements arising out of technological evolutions of the warfare. The group of governmental experts (referred to as GGE) of CCW has laid down certain regulatory measures in November 2024 applicable to LAWS key features of which are- ensuring predictability & reliability of LAWS, maintaining human oversight and limiting the engagements of LAWS. The rolling text laid down by the GGE has valuable and futuristic recommendations for regulating the LAWS and minimizing the risk. However, drawing a global consensus and bringing transparency & trust in the regulatory aspect of Autonomous Weapon System is a daunting task. The convention has made noteworthy progress, but received criticism due to slow pace over its consensus model.

The General Assembly in December 2024 adopted a resolution on Lethal Autonomous Weapon System (LAWS). The resolution received an overwhelming response with 166 votes in favor thereby indicating the growing consensus on deepening the dialogue with respect to regulation of autonomous weapons. The resolution invites further and detailed deliberations for a robust international legal framework for LAWS. The Secretary General of United Nations has along with ICRC called for a new international treaty laying out specific obligations on LAWS.

[57] Supra note 55, page 18.
[58] Convention on Certain Conventional Weapons, U.N. Office for Disarmament Affairs, https://disarmament.unoda.org/the-convention-on-certain-conventional-weapons/ (last visited May 10, 2025)

8. Conclusion:

Leapfrogging development in the field of Artificial Intelligence and its consequent impact on the rapid development of AWS is inevitable. As such Aws is not inherently unlawful or unethical; but the potential consequences which they intentionally and unintentionally may lead to are severe. The fragmented legal norms under international law and IHL have various futuristic facets to govern the challenges posed by AWS; however they struggle with blurring applicability, unpredictability concerns and complexity over application of the legal principles. Rapid development & investments in AI alongside the arms race, has triggered trust issues across the world and hence a comprehensive and persistent dialogue is necessary. The revolutionary technology of AWS shall be sooner or later bound to touch every human element, a long-standing, inclusive and futuristic legal framework is in the larger interest of mankind.

Contradictory views with respect to the legal concerns and other associated risks of Autonomous Weapon system must take a comprehensive relook at the efforts made at international level to address other forms of technological warfare and the concerns from all sides when it comes to using an Artificial Intelligence powered Weapon system. On the other hand, the emergence of Aws and AWS-based warfare is vehemently criticized and is perceived as a crisis scenario under laws of armed conflict.

Current international humanitarian law and other relevant branches of international law have faced multifaceted challenges to adequately deal with autonomous weapons. With decreasing level of human participation in military operations; the nature of armed conflict is considerably different from its origins. With several technological marvels achieved and getting achieved in the warfare aspect since centuries together; the most fundamental principles of IHL have remained in place. The existing framework does provide with a groundwork of necessary rules for AWS. The legal principles underlying current international humanitarian law have become more diffuse with exponential and unpredictable growth of autonomous weapon technology and lack of consensus over the regulatory aspects have created a trust deficit across the globe. The gaps in the specificity & enforcement need an urgent redressal through an inclusive and continuous dialogue.

9. Way Forward:

The risks, threats and legal concerns associated with Autonomous Weapon systems are no more

limited to fiction, but has become a reality. There have been campaigns from human Rights agencies calling for a complete ban on one side and the state-run missions for further autonomy in weapon system on the other. While, autonomous weapon system has certain advantages such as minimum & selective damage through targeted killings, elimination of 'human error' element and better control over decisions, reducing the burden on the combat forces; it comes with its grave dangers of possibly using the autonomy and machine learning to cause unintended, uncertain, unpredictable harm. While a complete ban on Autonomous weapon system sounds impractical, balancing autonomy with human control could be a solution. The defined human control requirements would ensure adherence to the principles of International Law thereby providing the certainty and predictability in the usage of the weapon systems.

A systematic relook at the principles of International Humanitarian Law and the designing of a new treaty for autonomous weapon system with 'meaningful control and accountability' requirements is the need of an hour. The municipal/national-level process must be combined with international dialogues aimed at fostering agreement and persistent dialogue. It will help reduce differences and will provide a platform of continuous engagement and achieving smooth consensus.

Worldwide network of NGOs and Civil Society Organizations can play an instrumental role in promoting transparency and best practices in the fragmented area of AWS and its regulations. They can bring a necessary people's mandate together to ensure that states developing AWS and regulatory authorities to undertake all the relevant factors into consideration for the regulatory framework. Alongside the traditional roles of ICRC and other entities instrumental to the IHL, inclusive and trust-based futuristic approach holds promise for the better future.

List of abbreviations:

1. AI- Artificial Intelligence
2. AWS- Autonomous Weapon System
3. CCW- Certain Conventional Weapons
4. ICRC- International Committee of Red Cross
5. IHL- International Humanitarian Law
6. LAWS- Lethal Autonomous Weapon System
7. UAV- Unmanned Aerial Vehicles
8. UN- United Nations