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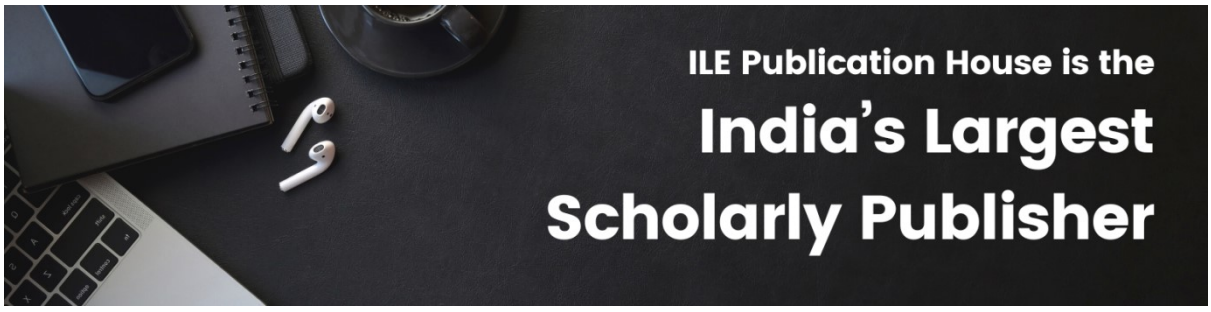

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# A STUDY TO ANALYSIS THE NEED OF DIFFERENTIATION AND SEGREGATION OF LETHAL AUTONOMOUS WEAPON SYSTEMS (LAWS) FROM GENERALIZED PERSPECTIVE OF AUTONOMOUS WEAPONS SYSTEMS (AWS)

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**ABSTRACT**

We normally think that the autonomous weapons systems(AWS) and lethal autonomous weapons systems(LAWS), are one and the same, but I think that there is difference. Those who are opposing the AWS like ICRC, SIPRI and some countries are all emphasising a kind of moratorium on AWS, but they doesn't differentiate the LAWS from AWS. While analysing their opinions, they actually meant that there is need for ban of AWS which going to take decisions on killing of human lives. The purpose of IHL is concerned with *jus in bello* not with *jus ad bellum,* and to maintenance of principle of proportionality in warfare, so the complete ban of AWS may not possible within purview of IHL. Hence we need to differentiate LAWS from AWS, and also to segregate LAWS from AWS. This paper going to work for that through technical and legal aspects using qualitative method and secondary data.

**KEY WORDS -** Lethal Autonomous Weapon System , Conventional weapons, Iron dome, Loitering munitions, Harpy drone, principle of proportionality.

## INTRODUCTION

In the world of technological development through technologies like artificial intelligence, machine learning and quantum computer, these technical things will also going to make great effects on armed forces by inculcating those technologies into various weapons, weapon platforms and the accessories to those weapons. At present countries like USA, Israel, UK, Turkey, south Korea, China and Russia are having various Autonomous and semi-autonomous weapon[1909], those weapons are either lethal or non lethal. We don't have a proper fully developed autonomous weapons systems till now. Then we have issues on accuracy & calculations of current artificial intelligence system, but I think those issues will be rectified shortly because of development of quantum computers. Both developed countries like USA, France, UK and developing countries[1910] like China, India, Singapore , Japan and Thailand are continuously investing on invention and updation of autonomous weapon systems. Even though we have humanitarian laws, those humanitarian law principles doesn't able to stop the countries from inventing those autonomous weapon systems and also from using such weapons in the battlefield, which we can see

[1909] Charukeshi Bhatt and Tejas Bharadwaj 's "Understanding the Global Debate on Lethal Autonomous Weapons Systems: An Indian Perspective", ( Carnegie endowment for international peace, August 30 2024) https://carnegieendowment.org/research/2024/08/understanding-the-global-debate-on-lethal-autonomous-weapons-systems-an-indian-perspective?lang=en accessed on 24 February 2025.

[1910] Lethal Autonomous Weapons Systems: A Primer For Philippine Policy, ( Nonviolence International Southeast Asia, July 2020) https://www.stopkillerrobots.org/wp-content/uploads/2020/08/NISEA-PHILIPPINE-PRIMER.pdf accessed on 24 February 2025.

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these kind of things in Ukraine - Russia[1911] and Israel – Gaza war[1912]. The countries started inventing and using autonomous weapon systems, but we don't have proper International legal instrument to govern such weapons and as well as a proper definition for those weapons. Now the countries either "call for ban" or regulation of Autonomous Weapons through organising [1913] " a open informal consultation and also stress CCW's GGE to arrive a conclusion", and they requested to make a new provisional agenda for subsequent UNGA sessions[1914], this resolution was tabled in seventy- eighth session of United nations general assembly (UNGA) and some countries including Russia & India are arguing that the Group of Governmental experts (GGE) under Convention on Conventional Weapons(CCW) would be an appropriate body to dealt with such weapons and the UN shouldn't interrupt. And international humanitarian organisation like ICRC(International Committee of the Red Cross)[1915], SIRPRI(Stockholm International Peace Research Institute), as well as UN general secretary António Guterres[1916] call for either Prohibition or regulations on such autonomous weapon. The reason behind their call is that "*the human lives should not be decided by machine or artificial intelligence systems".* While analysing the opinions of various countries and international humanitarian organisation & NGOs, they are discussing about the ban or regulation of Autonomous Weapons System (AWS) without understanding completely about AWS. They consider all AWS are lethal and there is no AWS without lethality but this is not applicable for actually situation, the countries were incorporating those things not only with weapons and also extended to weapons platform and conventional weapons. We can't make proper law without understanding how far it is autonomous, how far it is lethal and all other relevant matters. So I think before making a law we need to understand about the lethality and autonomy. And the article is going to analysis need for differentiation of LAWS from general perspective of AWS through technical differences between LAWS and AWS, then segregate the LAWS from AWS by legal, ethical and moral aspects.

## NEED FOR DIFFERENTIATION AND DIFFERENTIATION OF LAWS FROM AWS

Before analysing the needs for differentiation, we need to know about theoretical definition of AWS and LAWS under state laws, international instruments, and as well as how the existing autonomous weapons works and how it fits into such theoretical definitions.

### Definitions under National laws

The United States of America is the first state which actually framed a policy on autonomous weapons systems by issuing a directive in 2012[1917] later that directive was replaced by another directive in 2023[1918]. Both of the

[1911] Samuel Bendett and David Kirichenko's, "Battlefield Drones and the Accelerating Autonomous Arms Race in Ukraine", ( Modern war institute, Jan 10 2025) https://mwi.westpoint.edu/battlefield-drones-and-the-accelerating-autonomous-arms-race-in-ukraine/#:~:text=According%20to%20Sergeant%20Volodymyr%20Dehtiarov,near%20Lyptsi%2C%20north%20of%20Kharkiv. Accessed on 24 February 2025.

[1912] Yasmeen Serhan's , "How Israel Uses AI in Gaza—And What It Might Mean for the Future of Warfare" , (Times Now, December 18 2024) https://time.com/7202584/gaza-ukraine-ai-warfare/ accessed on 24 February 2024.

[1913] Benjamin Perrin's, "Lethal Autonomous Weapons Systems & International Law: Growing Momentum Towards a New International Treaty", ( American society of international law, volume 29: issue 1, January 24 2025) https://www.asil.org/insights/volume/29/issue/1#_ednref1 accessed on 24 February 2025.

[1914] After the adoption of draft resolution in seventy- eighth session of UNGA(A/C.1/78/L.56)https://documents.un.org/doc/undoc/ltd/n23/302/66/pdf/n2330266.pdf , the UNGA called the countries to submit their opinions about LAWS, and In seventy – ninth session UNGA adopted a resolution that stresses the GGE under CCW should conclude on LAWS by the end of 2025 preferably and as well as The resolution mentions the potential for a two-tiered approach to prohibit some lethal autonomous weapon systems (LAWS) while regulating others under international law. (A/RES/79/62).

[1915] Joint call by the United Nations Secretary-General and the President of the International Committee of the Red Cross for States to establish new prohibitions and restrictions on Autonomous Weapon Systems ( International Committee of the Red Cross, 5 October 2023) https://www.icrc.org/en/document/joint-call-un-and-icrc-establish-prohibitions-and-restrictions-autonomous-weapons-systems accessed on 24 February 2025.

[1916] Lethal Autonomous Weapon Systems (LAWS), ( United nations: disarmament) https://disarmament.unoda.org/the-convention-on-certain-conventional-weapons/background-on-laws-in-the-ccw/#:~:text=In%20his%202023%20New%20Agenda,Human%20Rights%20Council%20in%202023. Accessed on 24 February 2025

[1917] Autonomy in weapons systems ( DoD Directive 3000.9) https://ogc.osd.mil/Portals/99/autonomy_in_weapon_systems_dodd_3000_09.pdf accessed on 25 February 2025.

[1918] Autonomy in weapons systems, ( DoD Directive 3000.9 ) January 25,2023 https://www.esd.whs.mil/portals/54/documents/dd/issuances/dodd/300009p.pdf accessed on 25 February 2025.

directives on some extent define the "autonomous weapon systems" as follows:

> *" A weapon system that, once activated, can select and engage targets without further intervention by an operator. This includes, but is not limited to, operator-supervised autonomous weapon systems that are designed to allow operators to override operation of the weapon system, but can select and engage targets without further operator input after activation."*[1919]

From the definition, we can understand that they are actually speak with two types of Autonomous Weapons, one is operator supervised autonomous weapons system and another one fully Autonomous Weapon System without human intervention[1920]. In the same directive they also defined semi Autonomous Weapons which engages into operation only with a approval or intervention of the operation. There is conflict between two definitions, semi Autonomous Weapons is only operated with operator but also they say the Autonomous Weapons System also intervened by operator, here they doesn't differentiate these two things by how far such intervention decide it's autonomy . The USA itself doesn't have the clarity on " what is autonomous weapon system actually means", even though they invented such kind of a system in the year of 1978 by invention of Phalanx CIWS[1921]. And UK as well gave definition autonomous system under its policy on unmanned aircraft systems as follows:

> *"An autonomous system is a system that is capable of understanding higher-level direction and intent. From its perception and understanding of its environment, such a system is capable to take appropriate action to bring about a desired state. It is capable of deciding a course of action, from a number of alternatives, without depending on human oversight and control."*[1922]

UK's definition on Autonomous system is some extent has the clarity than the USA definition, but we can't take it as an appropriate one, because that is generalized definition which would applicable to both weapons and non-weapons systems. But some extent it clarifies Autonomy in Autonomous Weapons System. Only USA has a proper policy and guidelines for Autonomous Weapons System and UK has only defined the autonomy in their policy on unmanned aircraft Systems. Other countries doesn't have policy on their national level.

**International instruments**

We don't have a internationally accepted legal instrument that defines autonomous weapons systems. But the countries are stressing UN to stress GGE under CCW to make proper policy and some other would consider GGE under CCW is an appropriate body, they don't want interference of UN disarmament in this issues. The GGE meetings LAWS were started in 2014[1923], but they didn't reach any solution till now and while for the discussion they ask the countries to submit their opinions on LAWS, the countries also submitted their opinions to GGE under CCW. In their opinions they also gave definition for LAWS or AWS. We need to analyse those definitions for an complete understanding about Autonomous Weapons Systems.

[1919] G.2 Autonomy in weapons systems ( DoD Directive 3000.9) January 25,2023 https://www.esd.whs.mil/portals/54/documents/dd/issuances/dodd/300009p.pdf accessed on 25 February 2025.

[1920] Ibid

[1921] Phalanx CIWS ( close – in weapons systems) , it is an defence system which acts against anti-ship missile, aircraft and littoral warfare threats. This is a computer controlled system capable of performing Autonomously by it's search, detect, evaluation, track, engages and kill assessment. MK 15-Phalanx Close – In Weapon System (CIWS) ( America's Navy, 20 September 2021) https://www.navy.mil/resources/fact-files/display-factfiles/article/2167831/mk-15-phalanx-close-in-weapon-system-ciws/ accessed on 25 February 2025.

[1922] Section 2, definition of related terms ( Joint doctrine publication on unmanned aircraft systems, August 2017), (JDP 0-30.2) https://assets.publishing.service.gov.uk/media/667d6f155b0d63b556a4b437/ARCHIVE-UAS_JDP_0_30_2.pdf

[1923] Timeline of LAWS in the CCW, ( United Nations, office of Disarmament Affairs) https://disarmament.unoda.org/timeline-of-laws-in-the-ccw/ accessed on 26 February 2025.

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**Here, list of countries with definitions which was expressed in their opinions given to GGE under CCW**[1924].

| S.No | Countries | Their view on definition of Autonomous Weapons System |
|---|---|---|
| 1 | State of Palestine [1925] | Autonomous weapon system (AWS) is a system that use the processing of sensor data to select and engage a targets(s) with force without human intervention, upon the activation by human user(s). |
| 2 | Pakistan [1926] | LAWS is a category of weapons that has capability of incorporating autonomy in it's critical functions like in target selection and engagement. |
| 3 | Australia, Canada, Japan, Republic of Korea, United Kingdom and United States of America.[1927] | Autonomous weapons systems are a system, potentially enabling novel and more sophisticated weapons with Autonomous Weapons including those weapons that, can identify, select and engage targets with lethal force without further intervention by an operator, once activated. |
| 4 | Sierra Leone, Uruguay | Autonomous weapons systems is a system that incorporates autonomy into the critical functions of selecting and engaging against targets by applying force without human intervention, which means that a target is selected and force is applied based on the processing of sensor data, rather than direct human direct inputs.[1928] |

[1924] Non-exhaustive compilation of definitions and characterizations,( this is a report submitted by chairman to Group of Governmental Experts on Emerging Technologies in the Area of Lethal Autonomous Weapons System in March 10,2023) CCW/GGE.1/2023/CRP.1 https://docs-library.unoda.org/Convention_on_Certain_Conventional_Weapons_-Group_of_Governmental_Experts_on_Lethal_Autonomous_Weapons_Systems_(2023)/CCW_GGE1_2023_CRP.1_0.pdf accessed on 26 February 2025.

[1925] Section 1,State of Palestine's Proposal for the Normative and Operational Framework on Autonomous Weapons Systems, ( This is a proposal submitted by the state of Palestine to Group of Governmental Experts on Emerging Technologies in the Area of Lethal Autonomous Weapons System on March 3, 2023) https://documents.un.org/doc/undoc/gen/g23/043/35/pdf/g2304335.pdf accessed on 26 February 2025.

[1926] Section 11, Proposal for an international legal instrument on Lethal Autonomous Weapons Systems (LAWS), ( This is a proposal submitted by Pakistan to Group of Governmental Experts on Emerging Technologies in the Area of Lethal Autonomous Weapons System on March 3, 2023) CCW/GGE.1/2023/WP.3/Rev.1 https://documents.un.org/doc/undoc/gen/g23/045/72/pdf/g2304572.pdf accessed on 26 February 2025

[1927] Draft articles on autonomous weapon systems – prohibitions and other regulatory measures on the basis of international humanitarian law ("IHL"), (This is a draft article Submitted by Australia, Canada, Japan, the Republic of Korea, the United Kingdom, and the United States to Group of Governmental Experts on Emerging Technologies in the Area of Lethal Autonomous Weapons System on March 3, 2023 ) CCW/GGE.1/2023/WP.4 https://documents.un.org/doc/undoc/gen/g23/044/06/pdf/g2304406.pdf accessed on 26 February 2025.

[1928] Non-exhaustive compilation of definitions and characterizations,( this is a report submitted by chairman to Group of Governmental Experts on Emerging Technologies in the Area of Lethal Autonomous Weapons System in March 10,2023) CCW/GGE.1/2023/CRP.1 https://docs-library.unoda.org/Convention_on_Certain_Conventional_Weapons_-Group_of_Governmental_Experts_on_Lethal_Autonomous_Weapons_Systems_(2023)/CCW_GGE1_2023_CRP.1_0.pdf accessed on 26 February 2025.

| | | |
|---|---|---|
| 5 | China[1929] | Acceptable Autonomous Weapons<br>These are weapons which have a high degree of autonomy , but always under the control of humans , which means they can be used in a secure, credible, reliable and manageable manner, can be suspended by human beings at any time and comply with basic principles of international humanitarian laws.<br><br>Unacceptable Autonomous weapons<br>It means a system that has the five following characteristics;<br>1. Lethality which means sufficient lethal payload (charge) and means.<br>2. Autonomy which means absence of control and human intervention during the entire process of execution of a task.<br>3. Impossibility for termination, which means they is no way to terminate the operation after once it was activated.<br>4. Indiscriminate killing, which means that the device will execute the mission of killing and maiming regardless of conditions, scenarios and targets.<br>5. Evolution, which means that through interaction with the environment, the device can learn autonomously, expand it's functions and capabilities in a degree exceeding human expectations. |
| 4 | Russia[1930] | A lethal autonomous weapons system are the system which is fully autonomous in unmanned technical means other than ordnanc, that is intended to carry out combat and support missions without any involvement of the operator. |
| 5 | Argentina, Costa Rica, Ecuador, El Salvador, Panama, Kazakhstan , Philippines | Autonomous weapons system is a system that incorporates autonomy into their critical functions of selecting, targeting and engaging to apply force without human intervention.[1931] |

[1929] Section 11, Working paper on Lethal Autonomous Weapons Systems, ( This is a Working paper on Lethal Autonomous Weapons Systems Submitted by the People's Republic of China to Group of Governmental Experts on Emerging Technologies in the Area of Lethal Autonomous Weapons System on August 9,2022) https://docs-library.unoda.org/Convention_on_Certain_Conventional_Weapons_-_Group_of_Governmental_Experts_(2022)/CCW-GGE.1-2022-WP.6.pdf accessed on 26 February 2025.

[1930] Section 5, Application of International Law to Lethal Autonomous Weapons Systems (LAWS), (This is a proposal "Application of International Law to Lethal Autonomous Weapons Systems (LAWS)" Submitted by Russian Federation to Group of Governmental Experts on Emerging Technologies in the Area of Lethal Autonomous Weapons System on August 9, 2022) CCW/ GGE.1/2022/WP.9 https://documents.un.org/doc/undoc/gen/g22/446/61/pdf/g2244661.pdf accessed on 27 February 2025.

[1931] Section 8, Draft Protocol VI, (This is a Draft protocol Submitted by Argentina, Ecuador, Costa Rica, El Salvador, Guatemala, Kazakhstan, Nigeria, Panama, the Philippines, Sierra Leone and Uruguay to Group of Governmental Experts on Emerging Technologies in the Area of Lethal Autonomous Weapons System on August 9, 2022) CCW /GGE.1/2022/WP.8 https://docs-library.unoda.org/Convention_on_Certain_Conventional_Weapons_-_Group_of_Governmental_Experts_(2022)/CCW-GGE.1-2022-WP.8.pdf accessed on 27 February 2025.

| | | |
|---|---|---|
| 6 | France [1932] | Fully lethal autonomous weapons systems<br>It is a system that is capable of acting without human intervention or dependence on a command chain by setting their own objectives or by modifying, without any human validation, their initial programme or their mission framework.<br><br>Partial lethal Autonomous Weapons System<br>It is a system that is featuring decision-making autonomy in critical functions such as identification, classification, interception and engagement to which, after assessing the situation and under their responsibility, the military command can assign the computation and execution of tasks related to critical functions within a specific framework of action. |
| 8 | Venezuela [1933] | The lethal autonomous weapon system ( LAWS) that can autonomously select and engage a target, also known as critical functions, without the human supervision and control. |
| 7 | Brazil [1934] | An intelligent weapon system with autonomous operation mode (i.e., without human input after activation) capable of recognizing patterns in combat environments, and of learning to operate and make decisions regarding the critical functions of target identification, tracking, locking-on and engaging based on uploaded databases, acquired experiences and its own calculations and conclusions. |
| 8 | Germany[1935] | LAWS are the weapon systems that completely exclude the human factors from decisions about their employment. |

[1932] Section 2, Possible consensus recommendations in relation to the clarification, consideration and development of aspects on the normative and operational framework on emerging technologies in the area of LAWS, (This is a recommendations proposed on emerging technologies in the area of LAWS Submitted by France on September 27, 2021) CCW/GGE.1/2021/WP.4 https://documents.un.org/doc/undoc/gen/g21/263/21/pdf/g2126321.pdf accessed on 27 February 2025.

[1933] Section 8, Joint working paper, (This is Joint Working Paper submitted by the Bolivarian Republic of Venezuela on behalf of the Non-Aligned Movement (NAM) and Other States Parties to the Convention on Certain Conventional Weapons (CCW) on December 8, 2021) CCW/GGE.1/2021/WP.8 <https://docs-library.unoda.org/Convention_on_Certain_Conventional_Weapons_-_Seventh_Group_of_Governmental_Experts_(2021)/CCW-GGE.1-2021-WP.8_English.pdf> accessed on 27 February 2025

[1934] Section 5, LAWS and human control: Brazilian proposals for working definitions LAWS ( this paper submitted on August 19, 2020 ) CCW/GGE.1/2020/WP.4 https://documents.un.org/doc/undoc/gen/g20/212/17/pdf/g2021217.pdf accessed on 27 February 2025.

[1935] Non-exhaustive compilation of definitions and characterizations,( this is a report submitted by chairman to Group of Governmental Experts on Emerging Technologies in the Area of Lethal Autonomous Weapons System in March 10,2023) CCW/GGE.1/2023/CRP.1 https://docs-library.unoda.org/Convention_on_Certain_Conventional_Weapons_-Group_of_Governmental_Experts_on_Lethal_Autonomous_Weapons_Systems_(2023)/CCW_GGE1_2023_CRP.1_0.pdf accessed on 26 February 2025

| | | |
|---|---|---|
| 9 | Switzerland [1936] | Autonomous weapons System is a system that are capable of carrying out tasks governed by international humanitarian law in partial or full replacement of human in their use of force, notably in the targeting cycle. |
| 10 | Netherlands [1937] | A weapon that, without human intervention, selects and engages targets matching certain predefined criteria, following a human decision to deploy the weapon on the understanding that an attack, once launched, cannot be stopped by human intervention. |

[1936] Section 29, A "compliance-based" approach to Autonomous Weapon Systems, (This is a working paper submitted by Switzerland on AWS to Group of Governmental Experts on Emerging Technologies in the Area of Lethal Autonomous Weapons System on November 10, 2017) CCW/GGE.1/2017/WP.9 https://docs-library.unoda.org/Convention_on_Certain_Conventional_Weapons_-_Group_of_Governmental_Experts_(2017)/2017_GGEonLAWS_WP9_Switzerland.pdf accessed on 27 February 2025.

[1937] Section 5, Examination of various dimensions of emerging technologies in the area of lethal autonomous weapons systems, in the context of the objectives and purposes of the Convention, (This is working paper submitted by the Netherlands on Lethal Autonomous Weapon System to Group of Governmental Experts on Emerging Technologies in the Area of Lethal Autonomous Weapons System on October 9, 2017) CCW/GGE.1/2017/WP.2 https://documents.un.org/doc/undoc/gen/g17/294/52/pdf/g1729452.pdf accessed on 27 February 2025.

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Here we have gone through a list of countries their definition for Autonomous Weapons Systems which had been given to GGE. While analysing those definitions, we can clearly point out that most of countries doesn't have clear & proper idea about what is Autonomous Weapons System, form their definitions we understand that they are stressing on "*autonomy in selecting targets and engage in militant action without human intervention*", but minimal number of countries only understand what is actually autonomous weapon system means and they also defined "what is lethal autonomous weapons systems means". I think some extent the definition given by China to GGE is appropriate to differentiate LAWS from AWS, they actually classified the AWS into two types, one is acceptable and another one is unacceptable. While definition unacceptable Autonomous weapons systems, they are clearly pointed out the characteristics of lethal autonomous weapon system( LAWS ) as follows[1938]:

- Lethality
- Autonomy
- Impossibility in termination
- Indiscriminate killing
- Evolution

They knowingly or unknowingly had differentiated LAWS from AWS, while definition AWS, they also same like others didn't provide a appropriate definition.

**Existing autonomous weapons**

We can't come to conclusions with these theoretical definitions of various countries, here we are discussing nothing imaginary, the Autonomous Weapons Systems are already used in battle field we had seen such things in Ukraine – Russian war, Israel – Gaza and Libyan confits. So we have to analyse the practical applicability of such Autonomous Weapons Systems by analysing the working pattern of such weapons and as well as in what extent it has "*Autonomous Nature".*

**Here list of Autonomous Weapons Systems in existence**

1. **STM – Kargu[1939]**

   It is a potable combat rotary wing loitering munition ( attack drone) designed to provide a tactical ISR (Intelligence, Surveillance, Reconnaissance ) and precision strike capabilities for ground troops was produced by Turkish defence company STM. It has high performance, autonomous navigation & flight control and as well as autonomous target selection system[1940], that system is capable of selecting and engaging human targets based on machine learning object classification[1941]. STM is claiming that the precision strike mission is fully operated by an operator, in accordance with the Man–in–the–Loop principle, but as per UN 2021 report, it is "*true , fire, forget and find*" capability munition, that doesn't require data connectivity with operator for attacking targets[1942].

[1938] Section 11, Working paper on Lethal Autonomous Weapons Systems, ( This is a Working paper on Lethal Autonomous Weapons Systems Submitted by the People's Republic of China to Group of Governmental Experts on Emerging Technologies in the Area of Lethal Autonomous Weapons System on August 9,2022) https://docs-library.unoda.org/Convention_on_Certain_Conventional_Weapons_-_Group_of_Governmental_Experts_(2022)/CCW-GGE.1-2022-WP.6.pdf accessed on 26 February 2025.

[1939] KARGU : Combat Proven Rotary Wing Loitering Munition System, [ STM( Savunma Teknolojileri Mühendislik ve Ticaret A.Ş.) ] https://www.stm.com.tr/en/kargu-autonomous-tactical-multi-rotor-attack-uav accessed on 28 February 2025.

[1940] STM Kargu loitering munition, ( Automated decision research) https://automatedresearch.org/weapon/stm-kargu-loitering-munition/ accessed on 28 February 2025.

[1941] Hitoshi Nasu, " The Kargu-2 Autonomous Attack Drone: Legal & Ethical Dimensions" ,( Lieber Institute: Articles of War , June 10, 2021) https://lieber.westpoint.edu/kargu-2-autonomous-attack-drone-legal-ethical/ accessed on 28 February 2025.

[1942] Para 63 United Nations Security Council, 'Letter dated 8 March 2021 from the Panel of Experts on Libya established pursuant to resolution 1973 (2011) addressed to the President of the Security Council', (S/2021/229) https://documents-dds-ny.un.org/doc/UNDOC/GEN/N21/037/72/PDF/N2103772.pdf? Accessed on 28 February 2025

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2. **Phalanx CIWS (Close – In – Weapon – System)**[1943]

It is a fast – reaction, detect – through – engage, rapid – fire, computer – controlled, radar guided, 20 – millimetre gun weapon system. It is used by US Navy in their navy ships as a defence System since 1978[1944], which is capable of autonomously performing it's own search, detect, evaluation, track, engage and kill assessment functions against anti-ship missile, aircraft and other littoral warfare threats[1945]. In 1999 they upgraded the this Phalanx CIWS, that upgraded version( Block 1) is capable of encountering small & high speed surface craft, aircraft, helicopters and unmanned aerial vehicle (UAV) systems[1946]. This Block 1 variant is allows the operators to visually track and identify targets before engagement[1947]. This Phalanx CIWS is not only used by navy, and also US army used this system in land against rockets, artillery, and mortar systems.[1948]

3. **PATRIOT Missile defence System**[1949]

The PATRIOT ( Phased Array Tracking Radar to Intercept On Target) is a long range, all – altitude and all- weather surface – to – air missile defence system to counter tactical ballistic missiles, cruise missiles and advanced aircraft used by major NATO[1950] countries and some other countries which is around 19 in numbers[1951]. It is nearly autonomous[1952] and equipped TVM ( track – via – missile ), which allows midcourse correction commands are transmitted from the mobile Engagement Control Centre. It consists six major components namely: missile, missile launcher, radar, Engagement (ECS), power generation unit and high frequency antenna mast[1953]. The functions like search, target detection, track and identification, electronic counter – countermeasure function are carried out automatically, which is controlled by the digital weapons control computer in Engagement Control station(ECS) , which is only part in PATRIOT system that is controlled three operators namely tactical control officer, tactical office assistant and communication officer[1954]. And the target engagement can be carried out by manual, semi- automatic and automatic modes.

4. **Iron dome**[1955]

It is a kind defensive Autonomous weapons systems[1956], that detects and intercepts a variety of shorter – range targets such as rockets, missile, mortars

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( shells) and artillery[1957]. It consists of radar, battle management control (BMC) and Missile System. The radar detects the incoming missile and share the information to the battle management control system, it is the brain of iron dome which employs artificial intelligence to predict the trajectory[1958] and as well calculate the impact of incoming missile, then share the information to human operator with prioritising population areas[1959]. After that human operator launch the Timar Intercepting missiles from the launcher to knock down the incoming threats.

5. **SGR – A1 Robot [1960]**

It is the first killer robot, which was developed by Samsung Techwin Co in collaboration with Korea University in 2006 and it were continuously deployed in demilitarized zone (DMZ) between South Korea and North Korea from 2010[1961]. This is a sentry robot, also known as intellectual Surveillance and guard robot, that can capable of detect, surveillance, tracking, warning and even provide suppressive firing by using Daewoo K3 machine – gun and 40mm automatic grenade launcher.[1962]This system has three low light camera, heat and motion detect that can able to detect actions of intruder even it can able to detect surrender motions, and patterns recognition software[1963] that help to distinguish between human beings, animals and other objects. The system is designed in the way that the operator can override the operations of the robot, but it can able to act autonomously without human intervention.

6. **IAI HARPY[1964]**

IAI ( Israel Aerospace Industry )'s Harpy is the world first fully Autonomous and most operational Anti-Radiation loitering munition system, which is effective in SEAD (Suppression of Enemy Aircraft Defence) and DEAD (Destroying Enemy Aircraft Defence). This is "fire and forget" autonomous weapon that autonomously searching, identifying, acquiring, attacking and destroying enemy radar emitting threats.[1965]

These are some important Autonomous Weapon System (AWS) which is used by countries like USA, Israel, Turkey and South Korea respectively and some other weapons systems like Brimstone missile, K- Max helicopter[1966], Mini Harpy also there, these are not that much autonomous when compare with above-mentioned weapons systems.

**Need for differentiation of LAWS from AWS**

We already discussed about various definition and existing autonomous weapons, before discussing about needs, we have to know the meaning of weapon, as per black dictionary, " *weapon is an instrument used in fighting either for offensive or defensive purpose"*[1967]. And we are speaking with weapons used by armed forces, that is not limited to firearms, chemical,

[1957] Iron Dome System and Sky Hunter missile, ( Raytheon: RTX) https://www.rtx.com/raytheon/what-we-do/integrated-air-and-missile-defense/irondome accessed on 1 march 2025

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[1966] K- Max helicopter is used for transportation of cargo in battlefield, which is used USA in Afghanistan crisis in 2011.

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biological and nuclear weapons, it also includes conventional weapons like tanks, missile launcher, artillery systems, armoured combat vehicles, combat aircraft either manned or unmanned, attack helicopters and warships[1968]. Generally "Call for ban" on autonomous weapon will also restrict inculcation of artificial intelligence (AI) into such conventional weapons like K- Max helicopter and as well as defensive weapons systems like Iron Dome, Phalanx CIWS and PATRIOT Missile defence System. So we can't ban or make single regulation for both offensive like STM – Kargu & SGR- A1 Robot and defensive weapons, and as well as the purpose, uses, and the way of operation are different for each autonomous weapons and the level of autonomy is also different. Before classifying each things in AWS, we need immediate ban for LAWS, so for that we need clear distinction definition for LAWS from generalized perspective of AWS.

**Definition for AWS**

Before analysing the difference, we have to define what is Autonomous Weapons Systems and that would help us to differentiate the LAWS from AWS.

Here the definition for AWS in my opinion after analysing various definition given by the various countries and International Institutions .

> *AWS is a system that is capable of doing any of the critical functions, such as selecting, detecting, acquiring, evaluating tracking, engaging or attacking etc., or capable of defending or engaging in the battlefield for the purpose of combat., autonomously without human intervention. But such system could fit into any of the following categories* [1969]

1. *Human-in-the-loop (weapon systems that can select or detect on it's own but engage with target only with the human command)*
2. *Human-on-the-loop (weapon systems that can select or detect and engage with target on it's own with the oversight of humans)*
3. *Human-out-of-the-loop (weapon systems that can select and engage with target with out human intervention)*

**How LAWS is differ from AWS**

LAWS is one of the sub-set of AWS, that fall under third category, which is human-out-of-the-loop. Lethality in a weapon itself doesn't categorize that as LAWS, the autonomy in deciding such lethality would differentiate the LAWS from AWS, and the characteristics as both AWS and LAWS as follows:

| S.no | Nature | Autonomous weapon system (AWS) | Lethal Autonomous Weapons Systems (LAWS) |
|---|---|---|---|
| 1 | Lethality | May or may not be lethal | Should be lethal<br>And as well the engagement of lethal function should be decided and done by the weapon system by itself through searching, evaluating the data or target by it's |

[1968] Basics of firearms and Ammunition, (United nations office of drugs and crime) https://www.unodc.org/e4j/en/firearms/module-2/key-issues/typology-and-classification-of-firearms.html accessed on 2 march 2025.

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| | | | |
|---|---|---|---|
| | | | own. |
| 2 | Autonomy | May or may not be controlled by human | Shouldn't be controlled by humans |
| 3 | Human intervention | Humans may interfere with any or entire process or activities of the weapon or may not interfere even after the activation of weapons systems | Once the weapon activated, after that human can't able to intervene |
| 4 | Termination of actions of the weapon | May or may not terminate | After activation, couldn't be able to terminate the actions of the weapon |
| 5 | Evolution | May or may not evolve | Should be evolve as per the surrounding scenario and environment. |

Here we can see that any AWS may or may not possess the characteristics of LAWS, but once it attain all the five above mentioned characteristics, then that should be differentiated from the general AWS, and if any AWS lacks any of the characteristics of LAWS then it can be regulated or managed by various technical means.

**WHY NEED FOR SEGREGATION OF LAWS FROM AWS**

We already differentiated the LAWS from AWS, so that we can't make same regulation for differentiated subjects, for that we need a separate regulation. That's why I am speaking about segregation, here the segregation means that the regulation is going to made for LAWS should not in generalized manner, which means that the regulation should not discuss about other sub- sets of AWS, it should only focuses on weapons that has the characteristics of LAWS. Technical reasons is not the sole reason behind segregation, as well as legal, ethical and moral aspects also connected to that, so here we analyse the need for segregation through legal, ethical and moral aspects.

**Legal aspects**

International humanitarian law is a law which is jus in bello, so it concerns conduct of war, which also includes what type of weapons can be used and what can't be used. As per article 35(2) of additional protocol I, 1977 to the Geneva convention 1949, prohibited the countries to employ any weapons which may cause superfluous injury or unnecessary suffering". In the same Protocol under article 36 mandates there is an obligation of contracting parties to determine the prohibition of new weapons either in all or some circumstances. In the campaign against killer robots, they actually want to prohibit the Autonomous Weapons Systems for incompliance humanitarian principle like principles of humanity, distinction, proportionality and as well for lack of accountability when there is war crime is happened. But that can't done because the use,

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method of use and purpose of use of AWS is different in various circumstances. All circumstances are not same, so we can't ban or make a single regulation for entire AWS. So have separate regulation in accordance with various circumstances. LAWS is the only circumstances that violation all the humanitarian principles which mentioned – above, and also it lacks accountability for war crime, but in other sub-set of AWS, we can make the human operator who would accountable for war crime, if it falls either under human-in-the-loop or human-on-the-loop. But that can't be done for LAWS because it falls under human-out-of-the-loop. The ICJ in *Advisory opinion on Legality of the threat or use of nuclear weapons*, point out two principles that are fundamental in respect of conduct of military operations as follows:[1970]

1. *Prohibition of weapons that are incapable of distinguish the combatants and non combatants*
2. *Principle of humanity which prohibits the use of weapons that causes unnecessary suffering.*

We can't expect that LAWS should follow the above two principles, but for other sub-sets of AWS, we can make them to comply with these principles and as well as the above-mentioned principles either by programming the machine itself or by giving overriding power to human. But that can't be done for LAWS, because of evolution character in LAWS make the machine to comply with objectives which are programmed to that machine rather than the humanitarian principles.

**Ethical and moral aspects**

The people who are arguing in favour of AWS, point out that following benefits as follows:-[1971]

1. It would reduce the number the war fighter and also has greater efficiency than war fighter
2. Reduce the number of causalities in the battlefield
3. Help to access previously inaccessible areas
4. Will also work in dull, dirty or dangerous mission
5. Will act in humanly manner than the war fighter because it doesn't have the sense of self preservation and also the AWS wouldn't rape, torture and acting in cruel way when comparing with war fighters.

We can't neglect these benefits, because the countries are not ready to stop the war practice, they are keep on increasing their weapons and strength the military. So here we have to try to reduce causalities by encouraging alternative rather than stop it entirely. So incorporation of artificial intelligence into military is inevitable, we can make regulation for AWS rather than prohibiting it. The people who are against AWS, arguing that the machine should not decides the lives of human beings and it makes great destruction if the machine is programmed in such a way for the purpose of destruction.[1972]This argument is also acceptable and only applicable to the weapon which are comes under the category of human-out-of-the-loop, which is most probably LAWS. For other sub-sets of AWS, this argument won't applicable because those weapons would be either control or override by humans. So here LAWS is differ from generalized perspective of AWS, so we have to segregate the LAWS from AWS by making separate regulation from both legal and ethical & moral sense.

**CONCLUSION**

In the contemporary world the use of Artificial intelligence (AI) is inevitable, that AI technologies are inculcated into various field by using techniques of machine learning. The companies like Microsoft, IBM, Google, China telecom, Huawei, Alibaba and Tencent are invested on making a full fledged quantum computer. The development of full fledged quantum computer will increase the efficiency

[1970] Legality of the threat or use of nuclear weapons( advisory opinion) [1996] ICJ Rep 226

[1971] Amitai Etzioni and Oren Etzioni's, " Pros and Cons of Autonomous Weapons Systems" , ( Army university press, May – June 2017) https://www.armyupress.army.mil/Journals/Military-Review/English-Edition-Archives/May-June-2017/Pros-and-Cons-of-Autonomous-Weapons-Systems/ accessed on 1 march 2025

[1972] Ibid

of artificial intelligence technology and also reduce accuracy issues in AI technology. In future the AI weapons which are AWS will replace the traditional weapons systems, because the countries already invested lot of money to develop various AWS, for example USA is invested around 800 projects[1973] in developing AWS. AWS is a systems that differ from various characteristics, each characteristics differentiate the functionality and legality. In which LAWS are weapons, totally unacceptable under IHL, why because we can't make the LAWS to comply with principles of IHL. In my opinion before making regulation for AWS, we need to ban LAWS and it is easy to ban LAWS, because we already analysed the need for differentiation and also differentiate the LAWS from generalized perspective of AWS. And we also discussed about the need for segregation of LAWS from AWS, so then we can make a separate protocol under convention on convention weapons (Convention on Prohibitions or Restrictions On The Use of Certain Conventional weapons which may be deemed to be excessively injurious or to have indiscriminate effects), 1980 for banning LAWS.

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