Review Article

Examining Lethal Autonomous Weapons through the Lens of International Humanitarian Law

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Abstract

Technological growth and advancement, coupled with the advent and expansion of the Fourth Industrial Revolution, has brought about the invention of products that facilitate and enhance human life. Artificial intelligence and Machine Learning have permeated virtually all sectors of the world and have received both positive and negative feedbacks. Undoubtedly, the human race is yet to keep up with the accelerating expansion of the Fourth Industrial Revolution. Artificial Intelligence being a subset of the Fourth Industrial Revolution is packed with enormous benefits which shall be accrued to participating states, and one of these benefits is the Lethal Autonomous Weapons (LAWs) otherwise known as Autonomous Weapons Systems (AWS) or "killer robots". Since the inception of LAWs, researchers, lawyers, IT experts, and scientists have opposed its adoption, urging the international community to impose strict laws on states utilising it. The invention of AI programmed weapons is not the subject matter of contention, rather, the ground for opposition is the "autonomy" granted to the weapons. These machines can function without human oversight and are programmed to be unpredictable. International Humanitarian Law opposes the use of weapons that pose threats to the civilian population, of which LAWs is inevitably a part of. LAWs defile ethical and legal positions. These weapons are so accurate and swift that they can destroy hundreds of humans in a couple of minutes and countries in possession of these machines could use them without recourse to the victims. This research work investigates the threats and risks posed by Lethal Autonomous Weapons to the Society. It analyses International law provisions in respect to LAWs and feasible measure to curb the use of LAWs across the globe.

Keywords: Lethal Autonomous Weapons, International Humanitarian Law, Artificial Intelligence, Fourth Industrial Revolution.

INTRODUCTION

The Fourth Industrial Revolution is the broadest of the previous three industrial revolutions. It has introduced enormous and incomprehensible inventions into our world. Some of these inventions were created with good intentions, but have either deviated from their original agenda or are capable of causing great damage in the presence of a slight mistake. Lethal Autonomous Weapons is an example of an incredible invention born out of good intentions but has deviated from its original purpose. LAWs are lethal devices that have been empowered by their human creators to survey their surroundings, identify potential enemy targets and independently choose to attack those targets. The United States Department of Defense describes an AWS as "weapons system that once activated can select and engage targets without further intervention by a human operator"[1].

The British Ministry of Defence defines autonomous weapon systems as "systems that are capable of understanding higher level intent and direction. From this understanding and its perception of its environment, such a system is able 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

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[1] Allen, Gregory, 'DOD Is Updating Its Decade-Old Autonomous Weapons Policy, but Confusion Remains Widespread'. *Center for Strategic and International Studies*. [2022]. <https://www.csis.org/analysis/dod-updating-its-decade-old-autonomous-weapons-policy-confusion-remains-widespread> accessed 2 April 2023.

and control - such human engagement with the system may still be present, though. While the overall activity of an autonomous unmanned aircraft will be predictable, individual actions may not be."[2] LAWs and AWS are used interchangeably in this paper.

The Military uses several techniques to attack and identify their enemies. They can disguise, trace and even engage in an open fire, but all these techniques and more are dangerous and can lead to a great number of casualties or deaths. As a matter of fact, LAWs can do certain things which the Military cannot comfortably do – they can hover or loiter around the enemy's territory, and if shot down, there is little or no loss since it is not human. Prior to this, the Military used helicopters, but the buzzing sound of the helicopter was able to alert their enemies and lead to a probability of being shot down. There needed to be a replacement for helicopters, hence, drones. Drones were introduced into the Military as a detection device, and at the inception, they were not autonomous, but the variety of drones being currently manufactured are independent of control – it must be controlled in order to function. The peculiarity of the LAWs is that it is capable of not only assessing and identifying threats and enemies, but it can also decide when and what to attack, hence the word "autonomous". It is noteworthy that this level of autonomy depends on how it is programmed. The United States Congressional Research Service defines autonomy as "the level of independence that humans grant a system to execute a given tasks."[3]

These LAWs are not only cheap and able to operate all day, but they also offer undeniable advantages in combat which includes reducing casualties. Its uniqueness is not only in its cheap price, but also that it is very hard to target. Nevertheless, even if it is shot down, it has lesser consequence on the military.

Frank Hoffman, a fellow of the National Defence University who coined the term "hybrid warfare", believes that LAWs have the potential not just to change the character of war but even possibly its supposedly immutable nature as a contest of wills. For the first time, the human factors that have defined success in war, "will, fear, decision-making and even the human spark of genius, may be less evident," he says.[4]

TRENDING ADOPTION OF LAWs (AWS)

Developed nations like the United States of America have readily accepted the LAWs. The US Navy and the US Army have begun testing AWS. The US Air Force is not left out as it is developing advanced combat drones capable of operating autonomously if communication with human operators are lost when flying in high threat areas.[5]

The United States, Russia, Germany, China, South Korea and Israel have engaged in the adoption of LAWs. For instance, the Israeli Aerospace Industries' Harpy is an autonomous weapons, that when in autonomous mode "loiters over a given region for up to nine hours, waiting to detect electromagnetic emissions consistent with an onboard library of enemy radar, homes in on the emissions source (usually enemy air defense radar), and attacks." The Russian Federation is undoubtedly utilizing AI to its fullest in its Military sector. In a bid to match the military might against the US and China, Russia is developing new autonomous missiles, and drones via AI.[6]

In 2018, the US Nuclear Posture Review alleged that Russia was developing a "new intercontinental nuclear armed, nuclear-powered, undersea autonomous torpedo" named Status 6 and upon detonation, the device is designed to cause large zones of radioactive contamination.[7] The U.S. Navy is planning to weaponise AI as part of its Long Range Anti-Ship Missiles, and the Commander-in-Chief of Russia's Air Force, General Viktor Bondarev discussed equipping such smart missiles to the proposed next generation Russian stealth fighter; the Tuplev PAK DA. He explained to Russia's official Rossiyskaya Gazeta Newspaper that the fighter will carry AI guided missiles with a range of up to 7 kilometres, and can analyse the aerial and radio-radar situation and determine its direction altitude and speed.

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[2] Ministry of Defence, 'Unmanned Aircraft Systems (JDP 0-30.2)' (2017)< https://www.gov.uk/government/publications/unmanned-aircraft-systems-jdp-0-302> accessed 2 April 2023.
[3] The United States Congressional Research Service, 'Defense Primer: U.S. Policy on Lethal Autonomous Weapon System' (2022) <https://news.usni.org/2022/11/17/defense-primer-u-s-policy-on-lethal-autonomous-weapon-systems> accessed 3 April 2023.

[4] The Economist, 'Getting to grips with military robotics' *The Economist* (25 January 2018) <https://www.economist.com/special-report/2018/01/25/getting-to-grips-with-military-robotics> accessed 1 April 2023.
[5] Joseph Trevithick, '200 NGAD Fighters, 1,000 Advanced Drones in USAP; Future Plans' (2023) < https://www.thedrive.com/the-war-zone/200ngad-fighters-1000-advanced-drones-in-usafs-future-plans> accessed 5 April 2023.
[6] Barbara Starr and Zachary Cohen, 'US says Russia 'developing' Undersea Nuclear Armed Torpedo' *CNN Politics Edition* (3 February 2018) <https://wgno.com/us-world-news/us-says-russia-developing-undersea-nuclear-armed-torpedo/> accessed 28 March 2023.
[7] Ibid.

Currently, the U.S., Russia and China are often considered world's leading military powers, and all three have typically sought new defence strategies, and applying AI to missiles, drones and other deadly devices. This has led to an arms race between the three countries.

China has substantive and timely knowledge of AI developments in the US and elsewhere. The Chinese government AI reports frequently cite the U.S. National Security think tank publications. [8] However, some Chinese officials and influential people oppose AI. Jack Ma, the Chairman of Alibaba at the 2019 Davos World Economic Forum expresses his concern that global competition over AI could lead to war. Zeng Yi, a senior executive at NORIN Co. laments that AI could go beyond fighting battles to being at the helm of decision making. Fu Ying, the Vice Chair of the Foreign Affairs Committee of the National People's Congress in July 2018 expresses her awareness of the threat of LAWs to mankind.[9] Regardless, Xi Jinping is pressed on making the best out of AI, and in an October 2018 Politburo Study Session on AI stated that China must "pay firm attention to the structure of our shortcomings, ensure that critical and core AI technologies are firmly grasped in our own hands."[10] Allen Gregory in his analysis of China's AI strategy states that China's behaviour of "aggressively developing, utlising, and exporting increasingly autonomous robotic weapons and surveillance AI technology runs counter to China's stated goals of avoiding an AI arms race.[11]

Israel is not left behind in the adoption and use of LAWs. In May 2021, it pioneered what is believed to be the first ever AI guided combat drone swarm in Gaza attack. It is noteworthy that drones are usually controlled individually by remote operators, but a swarm is a single networked entity that flies itself using AI.[12] Israeli Minister, Ayoob Kara stated in 2017 that

Israel is developing military robots, including one as small as flies, and this is currently been actualized with positive results. [13]

Matthew Anzarouth[14] warns that the present AWS will be less dangerous than the new ones to be produced. This has pushed international human rights organisations to call for collective action to curb the LAWs.

BENEFICIAL IMPACTS OF LAWs (AWS)

Although Autonomous Weapons Systems have been heavily criticized by scholars and international bodies, some writers insist that Autonomous Weapon Systems will revolutionize the military positively. Amitai Etzioni and Oren Etzioni compile several persons and institutions in support of the Autonomous Weapons System:

The United States' Department of Defense [15] sees LAWs from a perspective of better substitute for "dull, dirty, or dangerous" military missions. In wartime, humans are exposed in most times to long battles that could wear them out, and also exposed to extremely harmful "radiological material" that even if they survive the battle, they may be scarred for life; as in the case of the American soldiers present during the nuclear bombing in Japan, where majority of them died of skin cancer. The Department of Defense proposes that LAWs can substitute human soldiers in the aforementioned conditions, therefore, a ban on LAWs might be vastly detrimental.

A Major in the United States' Army, Major Jeffrey S. Thurnher, [16] opines that LAWs are beneficial in warfare, as their speed of operation cannot be achieved by humans, and that their autonomy makes it

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[8] Allen Gregory, 'Understanding China's AI Strategy' (2019) https://www.cnas.org/publications/reports/understanding-chinas-ai-strategy accessed 28 March 2023.

[9] Fu Ying and John Allen, 'Together the U.S. and China can Reduce the Risks from Artificial Intelligence' (2020) <https://www.noemamag.com/together-the-u-s-and-china-can-reduce-the-risks-from-ai/> accessed on 7 April 2023.

[10] Rogier Creemers and Elsa Kania, 'Xi Jinping Calls for "Healthy Development" of Artificial Intelligence' (2018) <https://digichina.stanford.edu/work/xi-jinping-calls-for-healthy-development-of-ai-translation> accessed 7 April 2023.

[11] Allen Gregory, (supra).

[12] Tim McMillan 'DARPA's Dream of a Tiny Robot Army is close to becoming a Reality' (2020) Debrief <https://www.cnas.org/darpa-of-a-tiny-robot-army-is-close-to-becoming-reality/>accessed 29 March 2023.

[13] The Time of Israel, 'Israel Developing Terminator Bots, Minister Claims' *The Times of Israel* (25 February 2017) <https://www.timeofisrael.com/israel-developing-terminator-bots-minister-claims/amp/> accessed 4 April 2023.

[14] Matthew Anzarouth, 'Robots that Kill: The Case for Banning Lethal Autonomous Weapon Systems' *Harvard Politics* (2021) <https://harvardpolitics.com/robots-that-kill-the-case-for-banning-lethal-autonomous-weapon-systems/> accessed 4 April 2023.

[15] James R. Clapper Jr., 'Unmanned Systems Roadmap: 2007-2032 (Washington, DC: Department of Defense [DOD])' (2007), 19.<http://www.globalsecurity.org/intell/library/reports/2007/dod-unmanned-systems-roadmap_2007-2032.pdf.> accessed 1 April 2023.

[16] Jeffrey S. Thurnher, 'Legal Implications of Fully Autonomous Targeting', (2012) <http://ndupress.ndu.edu/Portals/68/Documents/jfq/jfq-67/JFQ-67_77-84_Thurnher.pdf.> accessed 1 April 2023.

possible for continuation of attack, even when communication links have been severed. [17] David Francis supports the adoption of LAWs[18] on the ground of cost. He cites the United States' Department of Defense figures showing that "each soldier in Afghanistan costs the Pentagon roughly $850,000 per year." Some estimate the cost per year to be even higher. However, Francis compares the expenditure to the TALON robot—a small rover that can be outfitted with weapons, and costs $230,000.

In the United States' Air Force Sector, Major Jason S. DeSon, supports the progress of LAWs on the ground of human physiological and mental constraints. He explains that the intense concentration required of fighter pilots drains them to a large extent, and human actions are quite predictable by their opponents. He states that a robot pilot or fully automated fighter plane which are not susceptible to human weaknesses are great substitutes in the face of warfare.[19]

Air Force Captain Michael Byrnes is in support of LAWs on the ground of efficiency. In warfare, efficiency of manpower and machines determines to a large extent, who wins a war. The normal war proportion is a one human to another human which is a loss for a side with less soldiers; the introduction of ammunition is a great feat for the side with most ammunitions, however, the operations of such ammunitions are limited because they are operated by humans, who can be killed during operation and bring everything to a halt. Captain Byrnes stipulates that a single unmanned aerial vehicle with machine-controlled maneuvering and accuracy could, "with a few hundred rounds of ammunition and sufficient fuel reserves," take out an entire fleet of aircraft, presumably one with human pilots.[20]

Lt. Col. Douglas A. Pryer, U.S. Army, sees LAWs through the lens of ethical advantages, that is, as

a tool to eradicate certain war crimes. He points out to stress caused by warfare as a predominant reason for sexual assault and other crimes committed by soldiers.[21]

MALEFICIAL IMPACTS OF LAWs (AWS)
Usually, before a nation goes into war, several necessary steps must be taken to ensure that the outcome of such war would be in favour of the nation. Political and economic analysts are usually hired to analyse, observe and conclude on the chances of such nation. These steps are taken mainly to reduce the likely number of deaths and destruction of properties during the course of war.

However, with the emergence of LAWs, these steps might not be crucial or important any longer. In fact, nations might go into war without prior notice of attack or without reasonable cause. A situation where human lives are no longer on the line in order to fight or win a war, the level of rationality of such nation tends to decrease. Matthew Anzarouth [22] confirms this by stating:
The use of LAWs would lower the threshold for states going to war, increasing the likelihood of conflict. Many philosophers, political scientists and governments have expressed the concern that militaries will resort to conflict more often if they do not need to rely on soldiers and can use LAWs instead. Domestic populations will be less wary of conflict if it no longer means seeing fellow citizens risk their lives on the battlefield.

Furthermore, James Dawes[23] compliments the above assertion where he agrees that the use of LAWs in battle will decrease "two of the primary forces that have historically prevented and shortened wars: concern for civilians abroad and concern for one's own soldiers." As a result of LAWs, nations will desist from undergoing a cost-benefit analysis before and during a war, which is usually the major focus of a country partaking in a war. Both the amount of money needed to acquire LAWs and maintain it is not up to that which is required to sustain soldiers in a warfare.

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[17] Ibid.

[18] David Francis, 'How a New Army of Robots Can Cut the Defense Budget," *Fiscal Times,* (New York, April 2 2013),< http://www.thefiscaltimes.com/Articles/2013/04/02/How-a-New-Army-of-Robots-Can-Cut-the-Defense-Budget.> accessed 29 March 2023.

[19] Jason S. DeSon, 'Automating the Right Stuff? The Hidden Ramifications of Ensuring Autonomous Aerial Weapon Systems Comply with International Humanitarian Law' [2015] (72) *Air Force Law Review*, 122. <http://www.afjag.af.mil/Portals/77/documents/AFD-150721-006.pdf.> accessed 30 March 2023.

[20] Michael Byrnes, 'Nightfall: Machine Autonomy in Air-to-Air Combat,' [2014] (23) (3) *Air & Space Power Journal*, 54. <http://www.au.af.mil/au/afri/aspj/digital/pdf/articles/2014-May-Jun/F-Byrnes.pdf?source=GovD.> accessed 1 April 2023.

[21] Douglas A. Pryer, 'The Rise of the Machines: Why Increasingly 'Perfect' Weapons Help Perpetuate Our Wars and Endanger Our Nation,' [2013] (93) (2) *Military Review*, 24.

[22] Ibid. 7.

[23] James Dawes**, 'An Autonomous Robot may have already Killed People – Here's How the Weapons could be more Destabilizing than Nukes' (2021)** <https://theconversation.com/an-autonomous-robot-may-have-already-killed-people-heres-how-the-weapons-could-be-more-destabilizing-than-nukes-168049> **accessed 4 April 2023. See also, 'Lethal AWS' <** https://autonomousweapons.org> **accessed 2 May 2023, where the following risks were identified: unpredictability, Escalation, Proliferation, Selective Targeting of Groups, etc.**

Acquisition of LAWs by world powers is very dangerous, and Conventions have been adopted to control such acquisition. LAWs continues to grow with even more complex algorithms, yet its control by the international community remains weak. No nation is willing to let down their security prowess for any collective action in the international community, and this is somewhat predictable. Unfortunately, collective action is needed to ban or curb the use of LAWs. The more a nation takes steps to acquire LAWs, the more other nations see the need to acquire LAWs to balance security risks. Hence, they withdraw their support for banning or regulating LAWs.[24] As much as majority of nations of the world see the exigency of banning LAWs, they too understand the risk their nations would face if they do not acquire LAWs while some nations do. This is currently the issue between the United States, Russia and China.[25]

When the United States acquires an autonomous weapon, Russia and China in a bid to meet up with the military might of the US, acquires LAWs too, this goes on vice versa. The mere acquisition of a sophisticated weapon by a country is a security threat to another. This is so because no nation can predict the future occurrence of a war, and who the enemy would be, therefore it is safe to be prepared. This "arms race" remains a factor that portrays eradication of LAWs as an impossibility.[26] [27] In November 2018, Archbishop Ivin Turkovic, the Permanent Observer of the Holy See to the United Nations stated that "in order to prevent an arms race and the increase of inequality and instability, it is an imperative duty to act promptly, now is the time to prevent LAWs from becoming the reality of tomorrow's warfare."[28]

Here is a proffered solution; if nations in possession of LAWs give them all up, then eradication of LAWs becomes possible. Even nations that assent to a ban or regulation, seeing its unfeasibility, will go ahead to acquire theirs. They are aware of the inequality if they decide not to acquire LAWs when some nations are doing so. This inequality becomes a security threat to the abstainees and a military advantage to non-abstainees – and no nation wants to appear weak in the international space. Another impediment to the ban of LAWs is the fear that not all nations would be truthful about the number of LAWs in their possession.

A nation might give up everything they have, while some others might hide some autonomous weapons and give just a fraction, thus, putting other nations at risk. No nation can accurately estimate the number of LAWs in the possession of another nation. As of 29 March 2019, the majority of governments' representative at the UN meeting to discuss the matter favoured a ban on LAWs. A minority of governments including those of Australia, Israel, Russia, the UK and the US, opposed a ban, and they still do so till date.[29] Matthew Anzarouth proposes that the best way to confront this dilemma is to foster discussions in international negotiations that expose to military superpowers the great risks that LAWs present.[30] He is optimistic that danger and risk enlightenment is capable of ending or regulating the use of LAWs. He further states that:

While many countries may fear falling behind if they make the first move to disarm and de-escalate, it is possible that when the stakes are sufficiently high and it is clear that nobody, including dominant powers, is immune to the dangers of LAWS, we may see sufficient international will to address them.[31]

The irony is that most scientists in these countries have outlined the futuristic problems attached to the adoption of LAWs, for instance, Elon Musk and Stephen Hawking of the United States among others have both spoken against LAWs, and nevertheless, the countries have remained adamant. The adoption of AWS by several countries has created a distraught technology community. More specifically, nearly 4,000 AI and robotics researchers called for a ban on LAWS in 2015; in 2017, 137 CEOs of AI companies asked the UN to ban LAWS; and in 2018, 240 AI-related

[24] Nicole Winchester, ‘"Killer Robots": Should Lethal Autonomous Weapons be Banned?' (2020) < https://www.lordslibrary.parliament.uk/killer-robots-should-lethal-autonomous-weapons-be-banned/> accessed 5 May 2023.

[25] Stuart Russell, 'Banning Lethal Autonomous Weapons: An Education' [2022] (38)(3) *Arizona State University*. Available online at <https://www.issues.org/banning-lethal-autonomous-weapons-stuart-russell/> accessed 5 May 2023.

[26] Stuart Russell, Anthony Aguirre, Emilia Javorsky and Max Tegmark, 'Lethal Autonomous Weapons Exists; They Must Be Banned' (2021) <https://www.spectrum.ieee.org/amp/lethal-autonomous-weapons-exists-they-must-be-banned-2653906642> accessed 5 May 2023.

[27] Hitoshi Nasu and Christopher Korpela, 'Stop the "Stop the Killer Robot" Debate: Why we need Artificial Intelligence in Future Battlefields' (2022) < https://www.cfr.org/blog/stop-stop-killer-robot-debate-why-we-need-artificial-inetlligence-future-battlefied?amp> accessed on 5 May 2023.

[28] Catholic News Agency, 'Holy See Renews Appeal to Ban Killer Robots' *Catholic News Agency* (November

28, 2018) <www.catholicagency.com/news/40009/holy-see-renews-appeal-to-ban-killer-robots> accessed 29 March 2023.

[29] Damian Gayle, 'UK, US and Russia among those Opposing Killer Robot Ban' (29 March 2021) *The Guardian*. <https://www.theguradian.com/science/2019/mar/29/uk-us-russia-opposing-killer-robot-ban-un-ai>accessed 29 March 2023.

[30] Ibid. 9

[31] Ibid. 9

organizations and nearly 3,100 individuals took that call a step further and pledged not to be involved in LAWS development. [32] LAWs, alongside other products of Artificial Intelligence are incredible when in the hands of the right person and used for the right purpose, but when in the hands of the wrong person and used for the wrong purpose, they become objects of human extinction. The mass production of LAWs and its sale to the general public by many AI organisations is very risky, as it could get into the hands of terrorists who will most definitely use it for the wrong purpose. Most scientists, researchers, lawyers and even nations are aware of this risk and have further called for the absolute ban of these weapons. [33][34]

In summary, the problems associated with LAWs include unpredictability, escalation, proliferation, and selective targeting of groups among others. They are also not costly to manufacture which entails that they would be present in the black market, hence in the hands of terrorists, it lowers general conflict barriers; since no human life is involved in warfare anymore, wars can be initiated for no just cause, they are weapons of mass destruction, they lack accountability, and they can be programmed to select targets, that it, they can wipe out an entire gender, race, ethnicity or religion by virtue of the features it is programmed to determine in a person (skin colour, hair texture, facial details and structure, and dressing among other unique features).

INTERNATIONAL HUMANITARIAN LAWS VERSUS LAWs (AWS).

The International Committee of the Red Cross (ICRC) spearheads meetings relating to the control of AWS. International Humanitarian Laws are important in this subject matter because they primarily set out rules to control the effects of armed conflict. International Humanitarian Laws cover two areas –
a. the protection of those who are not, or no longer, taking part in fighting;

b. Restrictions on the means of warfare – in particular weapons – and the methods of warfare, such as military tactics. [35]

International Humanitarian Laws have so far banned the use of many weapons, including exploding bullets, chemical and biological weapons, blinding laser weapons and anti-personnel mines. Furthermore, they prohibit all means and methods of warfare which:
i. fail to discriminate between those taking part in the fighting and those, such as civilians, who are not, the purpose being to protect the civilian population, individual civilians and civilian property;
ii. cause superfluous injury or unnecessary suffering;
iii. cause severe or long-term damage to the environment. [36][37]

There are several international laws guiding military conducts in warfare, they include; the 1954 Convention for the Protection of Cultural Property in the Event of Armed Conflict, plus its two protocols; the 1972 Biological Weapons Convention; the 1980 Conventional Weapons Convention and its five protocols; the 1993 Chemical Weapons Convention; the 1997 Ottawa Convention on anti-personnel mines; and the 2000 Optional Protocol to the Convention on the Rights of the Child on the involvement of children in armed conflict. However, amongst all these, the Geneva Convention of 1949 remains the first and primary source of International Humanitarian Laws. [38]

Several nations, especially those that have ventured into LAWs are skeptical about being signatories to international laws against AWS to avoid accruing legal obligations. Nations are aware that robots do not possess humanity, and therefore are more likely to carry out certain operations unlawfully, and once a nation becomes signatory to any international law banning or regulating the use of LAWs, the country becomes responsible for the repercussions of whatever unlawful actions carried out by the robot, since a robot is not a legal entity (and therefore cannot sue or be

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[32] Ariel Conn, 'The Risks Posed by Lethal Autonomous Weapons' (2018) <https://futureoflife.org/2018/09/04/the-risks-posed-by-lethal-autonomous-weapons/> accessed 4 April 2023.

[33] The Guardian, 'thousands of Leading AI Researchers Sign Pledge against Killer Robots' (18 July 2018) <https://www.amp.theguardian.com/science/2018/jul/18/thousands-of-scientists-pledge-not-to-help-build-killer-ai-robots> accessed 3 May 2023.

[34] Ariel Conn, 'AI Companies, Researchers, Engineers, Scientists, Entrepreneurs, and Others Sign Pledge Promising not to Develop Lethal Autonomous Weapons' (2018) < https://www.futureoflife.org/fli-projects/ai-companies-researchers-engineers-scientists-entrepreneurs-and-others-sign-pledge-promising-not-to-dveelop-lethal-autonomous-weapons/> accessed 3 May 2023.

[35] International Committee of the Red Cross, 'What is International Humanitarian Law?' (2020) <https://www.icrc.org/en/doc/assets/files/other/what_is_ihl.pdf> accessed 4 April 2023.

[36] Ibid. 35. See also, the United Nation Convention on Certain Conventional Weapons, 1980 preamble, Article 23 (e) of the 1899 Hague Regulations concerning the Laws and Custom of War on Land.

[38] European Civil Protection and Humanitarian Aid Protections, 'International Humanitarian Law: Factsheet' (2022) <https://civil-protection-humanitarian-aid.ec.europa.eu/what/humanitarian-aid/international-humanitarian-law-en/> accessed on 3 May 2023.

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sued, hence vicarious liability ensues).[39] [40] Moreover, LAWs are programmed to be unpredictable to outsmart the enemy, and this unpredictability applies to both the commander and the enemy. This unpredictability may most likely lead to unlawful and unethical actions. The goal of a LAW is to search, identify and take down targets, and since it is granted the autonomy to use an unpredictable means of achieving this goal, it may employ means detrimental to humanity and environmental sustainability.[41] Neil Davison illustrates the issue of liability in the adoption of LAWs in warfare:[42]

On the other hand, a programmer who intentionally programmes an autonomous weapon to operate in violation of IHL or a commander who activates a weapon that is incapable of functioning lawfully in that environment would certainly be criminally liable for a resulting violation. Likewise, a commander who knowingly decides to activate an autonomous weapon system whose performance and effects they cannot reasonably predict in a particular situation may be held criminally responsible for any serious violations of IHL that result, to the extent that their decision to deploy the weapon is deemed reckless under the circumstances.

A 2021 report by the American Congressional Research Service[43] states that there are no domestic or international legal prohibitions on the development of the use of LAWs, it however acknowledges ongoing talks at the UN Convention on Certain Conventional Weapons (CCW), and even presently in 2023, this is still the status quo.

Stuart Russel, a Professor of Computer Science from the University of California stated the concern he has with LAWs is that it is unethical and inhumane. He explains that in the 3rd major meeting under the United Nations CCW, several countries pressed for an immediate ban of LAWs. Germany said that "it will not accept that the decision over life and death is taken solely by an autonomous system." Japan stated that it

"has no plan to develop robots with humans out of the loop, which may be capable of committing murder."[44]

THE LEGALITY OR LEGAL IMPLICATIONS OF LAWs (AWS)

The efficacy of law in the society, especially to curb ultra vires actions cannot be overemphasized. Autonomous Weapons Systems like other products of the Fourth Industrial Revolution has raised concerns in the legal atmosphere. It is noteworthy that the presence of law is not to impede the advancement and development of the society, rather it is present to curb activities that can endanger and directly affect man.

The major problem with LAWs is the level of autonomy granted to it. The law frowns at the act of granting a machine which originally does not have a conscience or human feeling, the autonomy to decide whom to kill and when to kill. Robots do not have the ability to act humanely, hence, they can make decisions contrary to human ethics.[45] The University of Pennsylvania Law School asserts that the absolute autonomy granted to these weapons raise several "intersecting philosophical, psychological, and legal issues."[46] The University highlights several significant questions in relation to the autonomy of LAWs:

Whether moral decision-making by human beings involves an intuitive, non-algorithmic capacity that is not likely to be captured by even the most sophisticated of computers? Is this intuitive moral perceptiveness on the part of human beings ethically desirable? Does the automaticity of a series of actions make individual actions in the series easier to justify, as arguably is the case with the execution of threats in a mutually assured destruction scenario? Or does the legitimate exercise of deadly force should always require a "meaningful human control?" If the latter is correct, what should be the nature and extent of a human oversight over an AWS?[47]

Neil Davison[48] explains that the only way an AWS can be generally accepted under International

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[39] Elizabeth Fuzaylova, 'War Torts, Autonomous Weapon Systems, and Liability: Why a Limited Strict Liability Tort Regime should be Implemented' [2019] (40)(3) *Cardoza Law Review* 277.

[40] Pinchas Huberman, 'A Theory of Vicarious Liability for Autonomous-Machine-Caused Harm' [2021] (58) (2) *Osgoode Hall Law Journal* 233-284.

[41] Branks Marijan, 'Autonomous Weapons: The False Promise of Civilian Protection' (2022) <https://www.cigionline.org/articles/autonomous-weapons-the-false-promise-of-civilian-protection/> accessed 3 May 2023.

[42] Ibid. 48.

[43] Kelly M. Sayler, 'Defense Primer: Emerging Technologies' *Report Congressional Research Service* (June 8, 2021). < https://www.everycrsreport.com/reports/IF11105.html > accessed 14 April 2023.

[44] Stuart Russel, 'Take a Stand on AI Weapons' (27 May, 2015) *International Weekly Journal of Science* 521. < https://www.nature.com/articles/521415a > accessed 20 April 2023.

[45] Human Rights Watch, 'Losing Humanity: The Case against Killer Robots' (2012) <https://2012/11/19/losing-humanity/case-against-killer-robots> accessed 3 May 2023.

[46] University of Pennsylvania Law School, 'The Ethics of Autonomous Weapons System' (2014) <https://archive.law.upenn.edu/institutes/cerl/conferences/ethicsofweapons/background-readings.php> accessed 4 April 2023.

[47] Ibid.

[48] Neil Davison, 'A legal perspective: Autonomous weapon systems under international humanitarian law' (2020) <https://www.icrc.org/en/document/lethal-

Humanitarian Law is when in its execution, it observes legal judgment and is in compliance with International Humanitarian Law. However, since machines do not have the ability to exert legal or ethical judgment, its further use becomes detrimental and contradictory. Moreover, if an Autonomous weapon, in carrying out its programmed duty; searching for targets, identifying targets, and taking down targets, does so with human supervision and communication (probably by the commander who launched the attack), then the question of whether "they will be able to ensure distinction, judge proportionately or take precautions should the circumstances change", which is actually the reason for its opposition, would become obsolete.[49]

The Convention on Certain Conventional Weapons which is the primary International Humanitarian Law of the United Nations proposes humanity in warfare. It outlines conducts that are highly prohibited in warfare. The International Committee of the Red Cross opposes the adoption of LAWs and has been organising conferences and conventions to enlighten nations on the problems associated with LAWs. [50] The Convention on Certain Conventional Weapons strongly asserts the separation of warfare and military actions from the civilian population, hence, since the programming of LAWs lack such objective, it has been heavily criticized by the international community. The Convention fights against indiscriminate use of weapons under Article 3 (8)[51] –

The indiscriminate use of weapons to which this Article applies is prohibited. Indiscriminate use is any placement of such weapons:
a) Which is not on, or directed against, a military objective. In case of doubt as to whether an object which is normally dedicated to civilian purposes, such as a place of worship, a house or other dwelling or a school, is being used to make an effective contribution to military action, it shall be presumed not to be so used; or
b) Which employs a method or means of delivery which cannot be directed at a specific military objective; or
c) Which may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, which would be

excessive in relation to the concrete and direct military advantage anticipated.[52]

It is noteworthy that although this provision was made decades prior to the introduction of LAWs in the military, the use of LAWs currently in any warfare will be contrary to all three provisions of the aforementioned Article. In affirmation to the danger posed by AWS, the UN Secretary-General, Antonio Gueterres explained on his Twitter account that "Autonomous machines with the power and discretion to select targets and take lives without human involvement are politically unacceptable, morally repugnant and should be prohibited by international law".[53]

The United Nations Fifth Review Conference of the High Contracting Parties to the Convention on Certain Conventional Weapons (CCW) established a Group of Governmental Experts (GGE) on Lethal Autonomous Weapons Systems (LAWs) in 2016. It has had several meetings on this subject matter, but its first meeting took place in November 2017, with the aim to "examine emerging technologies in the area of LAWs, in the context of the objectives and purposes of the CCW, and with a view toward identification of the rules and principles applicable to such weapon systems" Evans maintains that throughout the first meeting, the majority of the states shared a common understanding of the importance of retaining human control over weapon systems, including control of both the selection and engagement of targets. [54] She continues that the next round of the UN GGE on LAWs meetings which took place in 2018, a total of 26 states supported a ban on LAWs and 12 states opposed even negotiating such a treaty. [55] According to Evans, three main ideas were proposed in regards for dealing with LAWs, namely:
a. "Negotiate a legally-binding instrument" to address LAWs, was favored by the majority of states who support either a ban or regulation
b. To continue discussions of current commitments under international law and articulate best practices under international humanitarian law.

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autonomous-weapons-systems-laws> accessed 4 April 2023.
[49] Ibid.
[50] International Committee of the Red Cross, 'Autonomous weapon systems: Is it morally acceptable for a machine to make life and death decisions?' (2015)< https://www.icrc.org/en/document/lethal-autonomous-weapons-systems-laws > accessed 4 April 2023.
[51] Article 3 (8) Convention on Certain Conventional Weapons, 19

[52] Ibid.
[53] United Nations, 'Machines Capable of Taking Live without Human Involvement are Unacceptable, Secretary-General tells Experts on Autonomous Weapon Systems' (2019) <https://www.press.un.org/en/2019/sgsm/19512.doc.htm> accessed 3May 2023.

[54] H. Evans, 'Lethal Autonomous Weapons Systems at the First and Second U.N. GGE Meetings'. (2018) <https://www.lawfareblog.com/lethal-autonomous-weapons-systems-first-and-second-un-gge-meetings> accessed 4 April 2023.
[55] Ibid.

c. A political declaration to formally express areas of consensus and elaborate guiding principles regarding human control and accountability.[56]

The UN GGE on LAWs meeting held in March 2019, emphasized that the disarmament machinery and arms control on lethal autonomous weapons systems could lead to a global arms race driven by both state and non-state actors. There was a deeper focus on the technological aspects of LAWs. There was discussion around the risks posed by different kinds of datasets as well as the challenges that arise for the systems reviews of self-learning systems. It was agreed that the lawfulness of weapons must be determined by its intended use and additional legal review systems would be necessary. However, while progress was made in regards to systems review requirements and consensus on the technological challenges, the GGE did not establish any legally-binding treaties or rules.[57] The 2022 UN GGE on LAWs and the first session (March) of the 2023 UN GGE on LAWs are yet theoretical with no framework for an international law banning or regulating LAWs.

In a speech of the International Convention of the Red Cross presented in the Meeting of GGE on Lethal Autonomous Weapons Systems (LAWS), 13 - 17 April 2015, the danger of the autonomy of the AWS was reemphasized thus –
Based on current and foreseeable robotics technology, it is clear that compliance with the core rules of International Humanitarian Law poses a formidable technological challenge, especially as weapons with autonomy in their critical functions are assigned more complex tasks and deployed in more dynamic environments than has been the case until now. Based on current and foreseeable technology, there are serious doubts about the ability of autonomous weapon systems to comply with IHL in all but the narrowest of scenarios and the simplest of environments. In this respect, it seems evident that overall human control over the selection of, and use of force against, will continue to be required.[58]
The United Nations Convention on Certain Conventional Weapons is not the only international document on warfare, the Geneva Conventions stands out also. In construing the provision of Article 36 of the

First Additional Protocol to the Geneva Conventions, it is safe to say that LAWs are also prohibited by the Convention. It provides thus –
In the study, development, acquisition or adoption of a new weapon, means or method of warfare, a High Contracting Party is under an obligation to determine whether its employment would, in some or all circumstances, be prohibited by this Protocol or by any other rule of international law applicable to the High Contracting Party.[59]

In an open letter[60] presented at the opening of the International Joint Conference on Artificial Intelligence (IJCAI) 2015 conference on July 28, 2015, it was stated that –
The key question for humanity today is whether to start a global AI arms race or to prevent it from starting. If any major military power pushes ahead with AI weapon development, a global arms race is virtually inevitable, and the endpoint of this technological trajectory is obvious: autonomous weapons will become the Kalashnikovs of tomorrow. Unlike nuclear weapons, they require no costly or hard-to-obtain raw materials, so they will become ubiquitous and cheap for all significant military powers to mass-produce. It will only be a matter of time until they appear on the black market and in the hands of terrorists, dictators wishing to better control their populace, warlords wishing to perpetrate ethnic cleansing, etc. Autonomous weapons are ideal for tasks such as assassinations, destabilizing nations, subduing populations and selectively killing a particular ethnic group.[61]

According to the statement delivered by the International Committee of the Red Cross (ICRC) in the Convention on Certain Conventional Weapons (CCW) during the Meeting of Experts on Lethal Autonomous Weapons Systems (LAWS) in April 2015 the ICRC urged States to consider the fundamental legal and ethical issues raised by autonomy in the 'critical functions' of weapon systems before these weapons are further developed or deployed in armed conflicts.[62]

The writers of this paper are of the humble view that LAWs (AWS) are not illegal, rather they are 21st century inventions that should be accommodated within the international corpus juris and regulated accordingly.

THE FUTURE OF LAWs (AWS)

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[56] Ibid.

[57] H. Evans, 'Lethal Autonomous Weapons Systems: Recent Developments' (2019) <https://www.lawfareblog.com/lethal-autonomous-weapons-systems-recent-developments > accessed 4 April 2023.

[58] International Committee of the Red Cross, 'Autonomous Weapon Systems: Is it Morally Acceptable for a Machine to Make Life and Death Decisions?' (2015)< https://www.icrc.org/en/document/lethal-autonomous-weapons-systems-laws > accessed 4 April 2023.

[59] Article 36, First Additional Protocol to the Geneva Convention 1949.

[60] Future of Life Institute, 'Autonomous Weapons: An Open Letter from AI and Robotics Researchers' (2016) <https://futureoflife.org/2016/02/09/open-letter-autonomous-weapons-ai-robotics/> accessed 4 April 2023.

[61] Ibid.

[62] Ibid 58.

Lethal Autonomous Weapons a.k.a. Slaughterbots are already here. They are engaged in battlefields. We are already in a world where autonomous weapons have been allowed to proliferate. Artificial Intelligence (AI) is poised to play an increasing role in military systems. The weapons sound futuristic despite advocacy against it as being both immoral and a major threat to global security.[63] A team has encouraged the formation of new international law on autonomous weapons.[64] ICRC supports efforts to establish internationally agreed limits on autonomous weapon systems to address the concerns they raise, ICRC recommends that states adopt new legally binding rules.[65] According to Human Rights Watch, LAWs or AWS has come to stay, the only way to safeguard humanity from these weapons is by negotiating new international treaty.[66] LAWs or AWS are of the far future.

CONCLUSION

The primary objective of this article is to expose the danger the world is likely to face if nothing is done to control AWS. Military powers have refused to back down, for instance, it was reported that the US budgeted $18billion dollars for AWS between 2016 and 2020. Having seen its advantages, several countries might follow suit, therefore causing chaos in the international community. Currently, Israel and Russia are not merely conducting research or manufacturing AWS, but also using it in warfare. Russia has reportedly adopted AWS in its war with Ukraine, while Israel has adopted swarm drones in its battle with Palestine.

Finally, nations need to show political will to address the evolving age of LAWs (AWS) with particular reference to necessary regulatory framework in the circumstance. Undoubtedly, Autonomous Weapon Systems is a very expedient innovation that is cost effective and that can reduce mortality rate in wartime, but if it is not handled, controlled and regulated properly, it could destroy more than it could ever save. Artificial Intelligence should ordinarily enhance the development and betterment of humanity, and not to be the weapon for extinction of humanity. The writers hereby advocate for the continued but regulated use of LAWs (AWS).

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[63] Future of Life Institute, 'Educating about Lethal Autonomous Weapons' (2022) <https://www.futureoflife.org/project/lethal-autonomous-weapons-systems/> accessed 3 May 2023.

[64] Ibid.

[65] ICRC, 'Position on Autonomous Weapon Systems' (2021) <https://www.icrc.org/en/documents/icrc-position-autonomous-weapon-systems?amp> accessed 3 May 2023.

[66] Mary Wareham, 'The Future of Artificial Intelligence' (2022) <https://www.hrw.org/news/2022/11/28/future-artificial-intelligence> accessed 3 May 2023.

RECOMMENDATION

An AI specialist or legal analyst is not needed to expose the glaring consequence of the continuous manufacturing, sale and distribution of LAWs. The autonomy granted to LAWs is the major problem this work has identified, however, such autonomy is its unique feature. It is safer to reprogramme these weapons to be semi-autonomous [67] rather than fully autonomous, to ensure that at no given time would a robot make decisions incomprehensible to or to the ignorance of the Commander.

Furthermore, an absolute ban, is not feasible. Hence, it is recommended that legal and institutional frameworks be put in place at global, regional and sub-regional levels to regulate the acquisition and deployment of these weapons. Existing international humanitarian laws should be reviewed to incorporate the reality of the emergence of Artificial Intelligent system.

These weapons are already shaping our world. They are really not fiction. Hence, in line with the ICRC position these writers recommend the prohibition of LAWs or AWS that targets humans especially civilian population; prohibition of LAWs with high degree of unpredictable behaviour; LAWs or AWS should have human control. Generally, it is recommended that there is a need for caution and the need to put humanity first in programming these weapons.

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[67] A semi-autonomous weapon system is a weapon that when activated, merely engages individual targets or specific target groups that have been selected by a human operator.