Forum: Disarmament Committee

Issue: Addressing the Legality of Incorporation of Artificial Intelligence into Weaponry

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Introduction

War is an institution. Though unfortunate, the foundations on which we rely even to this day are built on war. And if war is an end, weaponry is the means to that end, making it a much-tended practice. This attention has paved the way for weaponry to develop quickly and effectively throughout time, pioneering many advancements in technology or vice versa as seen with the atomic bomb or the jet engine. This trend continues to this day and with the advancements in Artificial Intelligence (AI); therefore, it is no surprise that weaponry has emerged as one of the top applications. This process is concerning on multiple levels, however; and has raised many questions regarding its morality and legality.

As AI is a relatively new advancement, its use in even such sensitive fields is loosely regulated. Despite attempts to reach a consensus on the regulation and practice of AI in weaponry, there haven't been many advancements. On topics, especially those of war, it is rarely easy to reach a proper census and AI is no exception. At the hands of every nation, advancement is advantage and advantage leverage. Not many are willing to give it up. So, while prolonged attempts of mediation and debate are pursued, an arms race of new-generation weaponry dawns on the horizon. Every so-called "new-generation" fighter, destroyer, self-propelled artillery, and other type of weaponry is prone to the race. Though not every advancement is as well-advertised as Lockheed Martin's F-35, which has multiple AI systems and assistants integrated to aid with coordination, communication, and encryption along with plans for AI-integrated combat systems, AI has taken hold of a huge share of weaponry and unregulated, it poses a great danger for the future of warfare and disarmament.

Furthermore, it's not only the legality of AI in warfare, but morality as well that is of concern. War, though inhumane, is waged by humans. What happens when that is not the case? International Human Law, the Geneva Convention, and many other frameworks agreed upon are framed on how war must be waged, and on whom to shoot or not to shoot. With concerns regarding machine bias, false positives, and disregard for human life, the integration of AI into weaponry is a daunting task. An autonomous weapons system may escalate a conflict or act disproportionate to the threat. It may not be able to distinguish between civilian and combatant, or even worse, distinguish civilian as a combatant. Faced with ethical dilemmas, it's very probable that these weapons systems act

inhumanely. Faced with dilemmas such as the Trolley Problem which may be used as a study case, AI systems do lose a grasp of morality and ethics. Should such a system act even if legalized?

The incorporation of AI into weaponry is not limited to legality and morality solely and raises concerns on exploitability and safety as well. On the other hand, it might also be argued that AI, as any innovation, must be welcomed and incorporated and that current frameworks must support such developments. Regardless, the issue is relatively new and unregulated; therefore, whatever the measures, AI must be recognized as the revolution in the war industry and addressed accordingly.

Definition of Key Terms

Lethal Autonomous Weapon Systems (LAW): According to the United Nations Office for Disarmament Affairs, “At present, no commonly agreed definition of Lethal Autonomous Weapon Systems (LAWS) exists.” The International Committee of the Red Cross, on the other hand, defines LAWS as “Autonomous weapon systems, as the ICRC understands them, are any weapons that select and apply force to targets without human intervention.” Though no census is reached on a standard definition, LAWS are recognized as an entity and are addressed mostly in the context of the definition of the ICRC.

Fifth Generation Weaponry: Tiber writes that “What exactly ‘fifth generation’ weapons are isn’t well defined.” However, Tiber also goes on by mentioning that the Head of Air Combat Command Kelly “framed his comments in relation to fifth-generation combat aircraft to the F-22, F-35, and B-2—which combine stealth and fused sensor data for superior situational awareness,” providing insight on what sets weaponry apart as “fifth generation”. Similar remarks have been made regarding weaponry with similar advancements by various specialists such as Mark Gunzinger, creating a framework for fifth-generation weaponry standards (Tiber).

Machine (Artificial Intelligence) Bias: Formally, “machine bias is the effect of an incorrect assumption in a machine learning model that's caused by overestimating or underestimating the importance of a particular parameter or hyperparameter” (Washington Technology Solutions). On this issue specifically, it should further be considered that “artificial intelligence bias occurs when the recommendation or predictions are discriminatory or misrepresentative of a group of people” (sdgs.un.org).

Autonomous Lethality: “Autonomy in its ‘critical functions’, meaning the ability to select (i.e. search for or detect, identify, track) and attack (i.e. intercept, use force against, neutralise, damage or destroy) targets without human intervention” (europarl.eu)

General Overview

The issue of the incorporation of Artificial Intelligence into weaponry partially falls under the question of Lethal Autonomous Weapon Systems, regarding the cases where AI is fully autonomous, and raises a new question regarding semi-autonomous systems that aid in tasks such as but not limited to identification, tracking, target recognition and classification, surveillance, and reconnaissance. Currently, though the issue of LAWS especially is recognized and partially addressed, neither issues are regulated internationally nor in most cases, domestically. In light of developments in weaponry such as unmanned aerial vehicles and others which are commonly referred to as “fifth generation” weapon systems, and their unregulated use in warfare such as but not limited to the Russo-Ukranian conflict and the Second Nagorno-Karabakh conflict, the issue is more prominent than ever.

Concerns Regarding the Performance of Artificial Intelligence

Artificial Intelligence has made tremendous progress in the last decade. Hand in hand with developments in hardware and software which allow for more sophisticated and accurate models to be trained, with larger datasets that yield stronger and more effective models, Artificial Intelligence has become a strong tool. It has already dominated many fields and continues to be increasingly incorporated into others. However, now that the time has come for the defense industry to experiment with AI as an option, more resilient measures must be taken. Collateral must not be tolerated on the issue of warfare.

Unfortunately, despite not reaching said resilience, AI has been employed on many weapons systems such as but not limited to SGR-A1. One of the most pressing issues is precision and accuracy. Especially concerning tasks of recognition and classification, systems must not be prone to error. However, machine bias, lack of human control, empathy, and situational awareness have made it so that especially fully autonomous weapons systems may not yet be applicable. There is still a lot to figure out. Can machine bias be ever eliminated in LAWS? Does the machine have more pressing bias than that of a solider? Can LAWS act proportionally to the threat and in alignment with already existing frameworks? Especially concerning the last question, the use of AI assisted LAWS must be evaluated in the light of the principals of International Humanitarian Law (IHL).

The Principle of Humanity

The Principal of Humanity of IHL, under the Marten Clause, states that “Until a more complete code of the laws of war has been issued, … the inhabitants and the belligerents remain under the protection and the rule of the law of nations, as they result from the usages established among civilized peoples, from the laws of humanity and the dictates of public conscience.” Artificial Intelligence, by nature, is a breach of this principle. It must be admitted that the clause is outdated, recognizing that it’s origin that dates back to the 1899 Hague Conference; however, considering the principle is still a foundation stone of contemporary IHL, it must be taken into account. How should one incorporate AI into warfare when it is required that the belligerents stay under human protection and conscience? It should be

noted that semi-autonomous systems pose a better way around this principle, whereas fully-autonomous systems, under the principle of humanity, constitute a controversial area. New frameworks must be constructed, adapted, and established if nations are to abide IHL.

The Principle of Infliction of Unnecessary Suffering

According to the IHL, Article 35 of Protocol I, "in any armed conflict, the right of the Parties to the conflict to choose methods or means of warfare is not unlimited" and "it is prohibited to employ weapons, projectiles and material and methods of warfare of a nature to cause superfluous injury or unnecessary suffering." The "limits" of warfare is further outlined in multiple frameworks such as the Geneva Convention even if it's violated frequently. General concern regarding the incorporation of AI into weaponry in the context of this principle is that AI may not be able to distinguish where the inflicted suffering is unnecessary. By nature, AI is set to run by some function, some pattern, and some algorithm. Whatever suffering index or similar solution may be presented, there is chance that autonomous weaponry may not be able to comprehend the concept of suffering. That inherently raises the question of whether AI will conform to this principle.

The Principle of Proportionality

Another concern is directly dependent on the principle of proportionality which's defined as "launching an attack 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" as expressed in IHL Rule 14. To employ AI in the battlefield, especially fully autonomous, one must ensure that the model grasps an understanding of the consequences of its actions and what they may be acted proportionate to. How should proportionality be determined and what determines the proportionality of the collateral? If the machine sees fit, can it not take action that may start a new conflict and how does one calculate the consequences of such a conflict? When these questions are yet to be resolved, it is challenging to tune autonomous machines to act accordingly. The incorporation process must pay particular attention to that issue and configure the framework accordingly.

The Principle of Distinction

That is the first law of the IHL on war: that "the parties to the conflict must at all times distinguish between civilians and combatants" and that "attacks may only be directed against combatants." It is of upmost importance that the employed system must be able to distinguish between combatants and civilians. Though modern recognition, classification, and in general, computer vision models have advanced greatly, when the distinction is not or can't be made in even contemporary conflicts as displayed by the Israeli-Palestinian conflict, the degree to which machines can be trusted is of question. Discrimination of the combatant is a very gray line in conflict. Conditions are distinct to every case and the split-second decisions made are dependent on various dynamic variables which, let

alone machines, many can't account for. Without such certainty, weaponry are prone to false positives, and thereby, of committing war crimes.

Major Parties Involved and Their Views

United States of America

The US defines LAWS as "a special class of weapon systems that use sensor suites and computer algorithms to independently identify a target and employ an onboard weapon system to engage and destroy the target without manual human control of the system." The U.S. claims to possess no weaponry that fit their description; however, as mentioned before, there is no agreed-upon description of LAWS and current descriptions certainly do not prohibit the assistance of AI. Furthermore, according to the Congressional Research Service, published on February 1st 2024, "U.S. policy does not prohibit the development or employment of LAWS." So if not semi-autonomous, development of fully-autonomous weaponry is unregulated, if not encouraged. The US Airforce's F-35 Lightning II, F-22 Raptor, General Dynamics Griffin, and many more weapon platforms utilize or plan to utilize AI. Infamous US unmanned aerial veichles such as the MQ-9 Reaper utilize AI for autonomous flight, data processing, and most importantly, automatic target recognition. The Patriot Missile System, "was one of the first tactical systems in the U.S. Department of Defense's (DoD) inventory to employ what is now termed "lethal autonomy" in combat, [referring] to a system that is capable of applying lethal force with little or minimal direct human oversight" (Hawley).

China

As previously referred to as the new arms race, it is no surprise that the incorporation of AI concerns China as well. China has employed AI in similar areas to that of the US, including but not limited to UAVs, missile systems, command and control systems, and weapons of cyber warfare. It is widely suspected, but not proved due to the confidentiality of information regarding CH-5 Rainbow, that the CH-5 Rainbow of China utilizes AI like it's counterparts on similar tasks to that of the MQ-9 Reaper's. The development of LAWS are similarly not prohibited by Chinese policy, and AI has been started to be widely incorporated into weaponry.

Russia

Like China and the US, Russia does not fall behind in this contemporary arms race either. Similar Russian weaponry such as UAVs, missile systems, command and control systems, and weapons of cyber warfare have all reported to have utilized AI. The platform that have reported have utilized AI the most are unsurprisingly UAVs. The new Russian UAV Altius-U, for example, has been of being capable of "independently [laying] a route to a target or a given patrol area without a human operator, bypassing a potential enemy's air defense zones, and also detect and attack important ground targets: missile launchers, communication centers, and headquarters" (Sergey).

Israel

Widely reported on in the last few years, Israel openly utilizes AI in weaponry as demonstrated most popularly with their missile defense system “Iron Dome”. The Iron Dome is used in action frequently, intercepting incoming missiles. There are numerous reports where the Iron Dome has saved lives which have been claimed to be unsaveable without AI, and it has also failed to intercept on occasion, causing casualties. As it is a defense system, the ethics of autonomous lethality does not pose a great issue, however, the failed interceptions do tell a story. Israel and the Iron Dome is a case study for the resilience of AI and how it can be trusted. Similar defense systems such as South Korea’s SGR-A1 which have been in use for some time outline measures of the incorporation of AI into weaponry. With systems that do not require autonomous lethality, ethical problems and conventions are possibly abideable.

Timeline of Events

Historical background about the issue is mostly very helpful, and is widely used in the debate. Therefore listing the significant events that have happened about this issue will help delegates to figure out which events to research, and which events not to research. The recommended format for this section is as follows, please use it whenever necessary.

June 1944	The V-1 Rocket, regarded as the first man-in-the-loop weapon, is used
Late 2000-2010s	Convolutional Neural Network models emerged, advancing image recognition and classification
September 2006	SGR-A1, a semi-autonomous sentry gun is developed
2010	SGR-A1 is deployed on the South-North Korean border
May 2011	Facial recognition was used to help confirm the identity of Osama bin Laden after he is killed in a US raid.
22 May 2018	Amazon sold its real time face recognition system Rekognition to police departments.
September 2019	The Indian government announced a facial recognition plan allowing police

	officers to search images through mobile app.
March 2021	First documented use of an autonomous weapons system
June 2021	First documented use of a drone swarm in combat
February 2023	Latin American and the Caribbean Conference on the Social and Humanitarian Impact of Autonomous Weapons. First-ever regional conference on autonomous weapons outside of the CCW
April 2023	Luxembourg Autonomous Weapons Systems Conference
October 2023	First-ever resolution on autonomous weapons tabled at the UN General Assembly. UN Secretary General and ICRC President call for States to negotiate a Treaty on autonomous weapons systems by 2026

UN Involvement

Since even the issue of defining LAWS has been a challenge, UN involvement has been present yet not definite. This has, as aforementioned, allowed member states to experiment, test, and develop semi-autonomous or fully autonomous weaponry under their own legislation, bypassing certain suggestions made by UN or UN-affiliated bodies. Provided under relevant UN documents, the general assembly has acknowledged *"the serious challenges and concerns that new technological applications in the military domain, including those related to artificial intelligence and autonomy in weapons systems, also raise from humanitarian, legal, security, technological and ethical perspectives,"* and have called out to both member states and relevant bodies to pose their views on point. These efforts have made significant progress in defining what semi-autonomous and fully autonomous weapons are, and where artificial intelligence falls amongst them. To incorporate AI safely and properly into weaponry, definitions must be convened as encouraged by the assembly. As the issue is mostly on convening, there is no further involvement than relevant assemblies and documents.

Relevant UN Documents

Lethal autonomous weapons systems, 12 October 2023, A/C.1/78/L.56

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, 11 October 2023, A/C.1/78/L.44

Report of the 2023 session of the Group of Governmental Experts on Emerging Technologies in the Area of Lethal Autonomous Weapons Systems, 24 May 2023, GGE.1/2023/2

A New Agenda For Peace - UN Secretary General Report, 20 July 2023

Follow-up to the report of the Secretary-General entitled “Our Common Agenda”, 15 November 2021, A/RES/76/6

Treaties and Events

The Convention on Certain Conventional Weapons (CCW)

“The CCW emerged as a response to the growing international concern over the humanitarian impact of armed conflict during the 1960s. Its primary aim is to protect civilian lives and prevent unnecessary suffering of combatants during and following active hostilities” (front.un-arm.org). The CCW is widely recognized and adhered to. The framework set by the CCW is what makes the incorporation of AI into weaponry legally difficult. As member states must abide by the CCW, the development of certain autonomous weaponry is restricted even though the CCW does not address autonomous weapons systems specifically. The CCW is a strong foundation upon which more must be laid.

Evaluation of Previous Attempts to Resolve the Issue

As mentioned under UN involvement and Relevant UN Documents, there have been attempts to convene on a definition of the issue; however, even the recognition of the issue is an issue to be addressed. When the U.S., China, Russia, or any other developers of AI-assisted weaponry do not recognize their weaponry to be at some degree, autonomous, as there is no framework to designate weaponry as such, there is no basis upon which the issue may be addressed.

As aforementioned, the CCW may be considered as a previous attempt to resolve the issue; on the other hand, it predates the issue of incorporation of Artificial Intelligence into weaponry. The CCW is not a framework designed to address the incorporation of AI into weaponry but one that ensures its practice does not harm civilian lives or cause unnecessary suffering.

Possible Solutions

As highlighted by previous sections on past attempts to resolve the issue, the main issue is that there is no basis to convene and intervene. That needs to be established. There needs to be some kind of foundation of definitions and boundaries to define restrictive or suggestive clauses over. To address the issue, the issue must be recognized first. Member states must cooperate and if necessary, compromise to reach a convention to base further development of autonomous weaponry upon.

Notes from the Chair

This is mostly unregulated grounds. All member states have their own benefits to safeguard; however, no member state is better off without a convention. This issue concerns all and does not provide one with an advantage over another. The lack of regulation poses a threat to all. So, all member states are strongly urged to cooperate and compromise. Do not push on extremely controversial grounds as the aim is to reach a common ground.

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