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Autonomous Weapon Systems Under International Law
Uluslararası Hukuk Kapsamında Otonom Silah Sistemleri

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AUTONOMOUS WEAPON SYSTEMS UNDER INTERNATIONAL LAW

Abstract

The article questions the compliance of autonomous weapons systems with international humanitarian law (IHL). It seeks to answer this question by analysing the application of the core principles of international humanitarian law with regard to the use of autonomous weapons systems. As part of the discussion on compliance, the article also considers the implications of riskless warfare where non-human agents are used. The article presupposes that it is actually possible for AWS to comply with IHL in very broad and general terms. However, there is a need for discussion, acceptance, and institutionalization of the interpretation for classification of AWS as well as expansion of the legal framework to cater to the advanced technology. This interpretation will also include a system for allocating and attributing responsibility for their use. The article's results will demonstrate the legal consequences of developing and employing weapon systems capable of performing important functions like target selection and engagement autonomously and the role of IHL and IHRL in regulating the use of these weapons, particularly in human control over individual assaults.

Keywords: *Autonomous Weapon Systems, International Law, Artificial Intelligence*

ULUSLARARASI HUKUK KAPSAMINDA OTONOM SİLAH SİSTEMLERİ

Öz

Bu makale otonom silah sistemleri ile uluslararası insancıl hukukun uygunluğunu araştırmaktadır. Uluslararası insancıl hukukun ana ilkeleri olan ayırt etme ilkesi, ölçülülük ilkesi, önleme ilkesi, askeri gereklilik ve insanlık ilkesi doğrultusunda, insan olmayan savaşçıların kullanıldığı risksiz savaş kavramının etkileri araştırmanın temelini oluşturmaktadır. Bu makale otonom silah sistemlerinin uluslararası insancıl hukuk normlarıyla uyumlu olabileceğini varsayarak; otonom silah sistemlerinin nasıl sınıflandırılacağını, doğacak zararlardan oluşan sorumluluğun kime atfedileceğinin devletin, operatörün, yazılımcının ve komutanın sorumluluğunun belirlenmesi dahil gelişen teknoloji doğrultusunda hukuki altyapının nasıl yorumlanması gerektiğini tartışmaktadır. Martens kaydı, özellikle ortaya çıkan teknolojinin insanlık ilkelerine ve kamu vicdanının emirlerine uymasını gerektirir. İnsanlık ilkeleri, başkalarına insanca muamele edilmesini ve insan yaşamına ve onuruna saygı gösterilmesini gerektirir. Kritik işlevler üzerinde anlamlı bir insan kontrolünden yoksun olan silahlar bu ilkelere uymayacaktır. Makalenin sonuçları, hedef seçimi ve angajman gibi önemli işlevleri otonom bir şekilde yerine getirebilen silah sistemleri geliştirmenin ve kullanmanın hukuki sonuçlarını ve bu silahların kullanımını, özellikle bireysel saldırılar üzerinde anlamlı insan kontrolünde uluslararası insan hakları hukuku ve uluslararası insancıl hukukun düzenlemedeki rolünü gösterecektir.

Anahtar Kelimeler: *Otonom Silah Sistemleri, Uluslararası Hukuk, Yapay Zekâ*

INTRODUCTION

Autonomous weapon systems (AWS) is a new phenomenon in warfare that has evolved with the present age of technology. It refers to the method of warfare that involves the use of artificial intelligence that functions entirely by itself i.e. without human interference. Many countries in the world such as the United States, China, Russia, and Iran are investing in this system (Hughes, 2018). It should however be noted that this system is still in its primitive stage and is predicted to be fully utilized in the near future.

This development has created diverging opinions about the future of warfare and the dangers associated with the use of AWS. Many organizations like the Human Rights Watch and the Campaign to Stop Robot Killers have opposed its use. (Docherty, 2012) (Moyes, 2020) They claim it is a threat to humanity because it is incapable of exhibiting human feelings. Furthermore, other critics claim it creates a problem of accountability in case of violation of international humanitarian law (IHL). States including Bolivia, Cuba, Ecuador, and Egypt have also called for its ban (Watch, 2020).

Contrarily, its proponents claim that it is a better alternative to the use of human combatants because, it ensures several military advantages such as reduced human casualties and increased power force (Etzioni & Etzioni, 2017). Some say it even promotes one of the main goals of international humanitarian law by reducing the risk combatants are exposed to (Schmitt M. , 2013). These opinions all seem to centre on the safety and protection of humans (both combatants and non-combatants) in the conduct of warfare involving autonomous weapon systems, albeit from different points of view.

Customarily, the conduct of warfare is regulated by international humanitarian law. The legal framework includes the four Geneva Conventions of 1949 and its two Additional Protocols and various conventions which seek to prohibit the use of certain weapons and military tactics and protect certain sets of people. However, the new development of AWS raises a question as to whether it can comply with international humanitarian law or not? The ability of autonomous weapon systems to comply with international humanitarian law is a central discussion in determining its future applicability. This will ensure that the rights of civilians and combatants have been protected by international humanitarian law and are not violated due to the application of AWS. In examining this question, it is crucial to

illustrate the development of AWS, the legal provisions of IHL, and the main problem which purports to hinder the compliance of AWS with IHL, which is accountability.

This article examines three main research questions; first, in matters relating to IHL and AWS, who bears responsibility, who respects the rules of IHL, and what can other subjects of IHL demand users of AWS?

Second, what is the position of IHL and IHRL on the use of force by AWS during armed conflict? Third, what is the position of IHRL with a focus on the legality of AWS complying with IHL rules, especially on the conduct of hostilities? The purpose of the study is to reinterpret existing provisions and contemporary international law norms that help reconcile competing legal regulations pertinent to humanitarian intervention to the greatest extent possible.

The research will focus on a comparative approach whereby different legal systems will be compared as to the applicability of IHL and IHRL in matters concerning the use of new technology in warfare. A qualitative technique will be applied whereby the study will assess the legal norms in terms of their logical connections or disjunctions through case studies and interpretation of existing literature.

The primary sources of data for this study will be legal instruments and the choices that result from them. Also, the research will focus on the core data gathering techniques such as secondary data analysis, with examples from classic and modern quantitative research.

1. METHODOLOGY

The methodology used for this study includes the research and selection of primary and secondary data, examining both the origin and trustworthiness.

In order to answer the questions of incentive and implementation. The antinomic democratic peace theory addresses the incentive aspect or why of AWS, the adoption capacity theory operationalizes the implementation aspect and allows for conclusions on how adoption plays out. Within this framework, qualitative content analysis will be provided.

Antinomic democratic peace theory is a theoretical tool for understanding the behavior of democracies *vis-à-vis* autocracies. It allows for insights into different

dyadic pairs of actors engaging in conflict and leads to explanations for why they do so (Sauer & Schörnig, 2012).

Adoption capacity theory is a means to understand how an organization adopts an innovation such as AWS while requiring the operationalization of two major variables such as financial intensity that includes quantitative data in the form of funds for AI and defense related research and development (Horowitz, 2010).

The objective of this study was to find and subsequently codify a theme for defining the various levels of human involvement in the decision-making process. The first step was to identify the data needed and determine whether the dataset could be used as a primary or secondary source. Through an analysis of political statements and reports from institutions, entailing a positive, negative, or neutral assignment of human control of lethal decision-making, the data was labelled primary qualitative data. Examples of primary sources were political statements, official strategies for military and economic matters, reports of government agencies, parliaments, reputable NGOs, and think tanks. Another set of primary data was the quantitative spending information on AI and AWS needed for the financial intensity variable within the adoption capacity theory.

Secondary data used for the qualitative content analysis came from academic articles that identified and discussed ethical, legal, and practical issues for using AWS. They touched upon accountability, compliance with IHL principles of distinction, proportionality, and ease or lack of proliferation. These variables were critically analysed individually.

Once data was identified and categorized, it was connected with incentives. For example, the depersonalization of killing allowed for the physical removal of military personnel and associated risk, and therefore establishes an incentive for risk aversion (Korac, 2018).

A systematic content analysis was performed on AWS's supportive and critical literature, enumerating the problems AWS could solve, cause, or incentivize. Together with the primary sources on meaningful human control, the foundation for the analysis of incentives will be constructed.

The second part of the analysis was structured similarly, though with a different theory and alternate dataset. The purpose was to reveal information on

implementation principles. With adoption capacity theory, the article focused on identifying the organizational capital and financial intensity needed to adopt AWS.

It should be noted that the use of primary sources for this research was limited and small in scope. It only functions in a supporting role. It is the secondary qualitative sources that facilitated analysis. In the first half of the analysis, the concept of meaningful human control served as a foundation and in the second half, primary sources were used to support and substantiate results on financial intensity.

Most of the data outlined in the empirical material section of this study were selected after a careful review of several reports on AWS, chief among them SIPRI's "Mapping the Development of Autonomy in Weapon System" (Verbruggen & Boulanin , 2017). The quantitative data on military spending was pulled from SIPRI's general military expenditure database (Tian, Fleurant, Kuimova, Wezeman, & Wezeman, 2018) and was supplemented with specific AWS-related national research, development projects, and sample AWS systems. In addition, numerous examples of AWS tests and deployment were compiled from a wide range of academic articles and a few journal reports (Scharre, 2018).

Statements on meaningful human control were similarly collected from country representative statements, obtained through NGO publications on the issue of AWS, such as the Campaign to Stop Killer Robots and the International Committee for Robotic Arms Control. A chronology of publications and reports on AWS since their first appearance in the academic sphere. The reports and statements used in this analysis cover data provided between the emergence of AWS technology in the new millennium and 2022.

Given the secretive nature of military projects, data on research and development was limited. The quantitative information referenced in this study was partly built on estimates. Autocracies do not give the public access, and the available information is rudimentary and not reflective of the complete picture. For example, US-published information likely served as a deterrent to signal or prove technological superiority. In the framework provided by adoption capacity theory, the data accuracy did not play a central role but rather exposed general trends, and relatively high or low spending was the key information point.

There is the possibility that organizations were not entirely independent. SIPRI, for instance, is funded partially by the German foreign ministry, and there may be a

conflict of interest since Germany was the subject of their study repeatedly. After a thorough investigation, however, there were no alternatives for avoiding such sources.

The topic of this study is ongoing and partially speculative, which means the reliability of the data used may be the fundamental weakness. Given the sensitivity and partly classified nature of the material analysed, new information, new regulations, or happenstance leading to either may have drastically altered the conclusions other researchers reached when studying the same subject. The coding of the content analysis was kept simple with against (on the loop), in favor (off the loop), and within limits (on the loop) positions. The arguments and deductions were not entirely safe from subjectivity, but when information was found to counteract thesis arguments it was clearly noted, to ensure objectivity and combat selection bias.

Study validity was strengthened whenever possible with consistent arguing for the chosen data and coherence of conclusions and deductions. Qualitative content analysis was the right method for research questions concerning why and how. AWS, in this case, focused on descriptive data to analyse incentives and operational capabilities and underlined the advantages of choosing content analysis over discourse analysis. Discourse analysis was better suited for understanding the context, framing, and communication.

From a theoretical perspective, the weakness of the antinomic democratic peace theory was that it did not touch upon the non-state actor dynamic, which, thus far, has been the primary target for drones. This effect is neglectable until the moment when non-state actors will have the means to build and engage AWS themselves. Similarly, antinomic democratic peace theory's organizational capital and financial capacity are not clear in measuring them, even though there are guidelines to do so. The interpretation of these two variables was a weak point and contested by other researchers. The evaluation of these two factors in this study is the point where subjectivity is least avoidable.

2. LITERATURE REVIEW

Computerized weaponry is defined on a continuum of autonomy. First, there is direct operator control where weapons are controlled by human operators who are in some physical contact with the machine. Second, there is teleoperator control where the unit is still controlled by a human, but at a distance. Third, there is

computerized weaponry under pre-programmed operation where there is programming to perform a certain task and simply follow a predetermined set of orders (Bruun, Goussac , & Boulanin, 2021). Approaching truly autonomous technology is the fourth level, fully discussed in this study, refers to as structured control where units work in conjunction with artificial vision or sensor systems to respond in a rudimentary way to environmental stimuli.

In order to define autonomous weapons as those weapons which have the capability of functioning at some level without human input or supervision. Furthermore, such weapons must be able to identify (possible) threats/targets, determine what course of action to take when the target is identified (fire or not), aim, fire, and reload all on their own (Caron, 2020).

The catalyst for AWS historically was the global pressure to reduce civilian casualties during the conflict. Carpet-bombing entire cities or an individual zone increased civilian causalities. In the case of conventional bombs, the proximity to the target and the probability to neutralize the target was directly proportional to each other. This practice also exposed airborne assets to enemy fire and exponentially increased the risk of airplanes being shot down (O'Connell, 2013).

Those who support AWS fall into two groups – those who advocate for AWS because of military advantage and those who emphasize the moral justification for them. Scholars argue for the use of AWS would make war more compliant with international humanitarian law (IHL) (Schulzke, Drone Proliferation and the Challenge of Regulating Dual-Use Technologies, 2018). The ability to strike surgically against critical targets, known as decapitation strikes, is weighted against collateral or civilian damage that depersonalizes killing (Crootof, 2018).

While some support AWS with moral arguments, others oppose AWS, asserting this kind of reasoning is misguided. A human is just as autonomous as an AWS. Sparrow's argument would collapse once humans replace AWS and the outcome, presumably, stays the same (Sparrow, Robots and Respect: Assessing the Case Against Autonomous Weapon Systems, 2016). Most scholars arguing against using AWS refer to either ethical or legal grounds and occasionally a combination of both. They say the ability to strike surgically against critical targets, known as decapitation strikes, is weighted against collateral or civilian damage and depersonalizes killing. Their argument is similar to others that oppose using any machine to kill a human and echo the paradigm that machines treat human life as

objects and killing humans denies normative and inherent human dignity (Rosert, 2019).

Sparrow focused on AWS ethics and wrote that arguments in favour of deployment were flawed and that there should be moral objections. He relied on the claim that AWS is distinct from accepted weapons of war because they either fail to transmit an attitude of respect for enemy combatants or worse, they transmit an attitude of disrespect. He also distinguished between remote-control weaponry such as Predator and Reaper drones used by the US and systems where an onboard computer chooses targets for the system, determining who shall live and who shall die. Essential to Robert Sparrow's ethical model was the argument that no one could be held accountable for errors and therefore could not be prosecuted when a machine makes an autonomous decision (Sparrow, 2007).

Edward Geist, a policy researcher and scholar at the RAND Corporation, argued that we should avoid positively or negatively evaluating AWS and instead study the broader effects of such machine use. He asked the question, "Can we prevent an artificial-intelligence (AI) arms race?" and he came to the conclusion that an AI arms race is already well underway (Maas, 2019). Furthermore, Geist postulated that an AI weapons challenge extends beyond AWS because some of the riskiest military applications of artificial intelligence do not select and engage their own targets (Geist, 2016). This is a recurring concern that AI technology is not containable via regulation, making its non-proliferation difficult or even impossible.

In order to put these arguments in context the distinction between narrow and general AI must be made. General AI is true artificial intelligence and does not yet genuinely exist. Its invention would be ground breaking and affect every domain of humanity. AWS supporters who claim AWS would make war more just think that general AI would be needed for a machine to understand the meaning or value of human life. Narrow AI is machine learning and refers to the process by which machines develop pattern recognition and make predictions based on data (Deeks, Lubell, & Murray, 2019). Narrow AI may have implications in this analysis. This study will address narrow AI or weak AI. It is notable that the body of literature regarding narrow AI is less developed and smaller in scope.

Scholars who support AWS conduct discourse analysis and cite one other in a fluid debate reflective of intertextuality. Their emphasis is on AWS deployment

and its deliberate transfer of human killing decision-making power to a machine. Though the control to initiate lethal measures is held by humans, human involvement is limited (Schulzke, 2013). This is the AWS defining characteristic. The absence of meaningful human control is universally recognized as the main source of moral and ethical issues arising from AWS (Ekelhof, 2017). This phenomenon can be called human-in/out/on-the-loop, reflecting the various levels of human involvement in the decision-making process (Hoven & Santoni de Sio, 2018).

Human In The Loop: Leverages both human and machine intelligence to create machine learning models. In a traditional human-in-the-loop approach, people are involved in a virtuous circle where they train, tune, and test a particular algorithm.

Human Out of The Loop: Focused on taking people out of the loop and letting machines do all the learning and decision-making.

Human On The Loop: Machines that can carry out a targeting process independently from human command, but remain under the real-time supervision of a human operator who can override any decision (Tamburrini & Amoroso, 2020).

Research encompasses the principles of accountability and compliance. The method to study the accountability factor is qualitative and is a small comparative study. Compliance with the principles of distinction between combatants and civilians and proportionality of damage are relevant to policy making. Landmines can violate the principle of distinction while AWS could violate both of these principles (Amoroso & Tamburrini, 2017). Therefore, measures used in this study include distinction and proportionality.

3. AUTONOMY IN WEAPON SYSTEMS

In riskless warfare, there are suggestions that it is possible to experience a situation where the conduct of AWS may be ethical in war compared to humans for the following reasons: first, deploying an AWS represents an opportunity to protect human military personnel from danger. Second, an AWS can deliver force in a more rapid and accurate way. Third, robots do not have a self-preservation instinct therefore revenge, anger and prejudice will be eliminated from the battlefield. (Tonkens, 2012).

Artificial intelligence and machine learning will never satisfy the fundamental principles needed to lawful use autonomous weapons " (Anderson & Waxman, Debating Autonomous Weapon Systems, Their Ethics, and Their Regulation Under International Law, 2017)." Judging by what happened in the past modern technology like artificial intelligence made an over-promise and the principles which imply are cognition and marvelously unique amid the conflicts of war " (Sharkey N. , The Evitability of Autonomous Robot Warfare, 2012)." The development of autonomous weapon systems was deemed to be moral and social wrong as it is regarded unlawful to take the human moral agent out of the firing loop as far as humanity is concerned.

A firing machine even though being regarded as good cannot be substituted by a true moral agent like a human being with conscience even though the judgment might be flawed " (Sharkey & Suchman, Wishful Mnemonics and Autonomous Killing Machines, 2013)." Another argument holds that autonomous weapon systems with their automation use void of human interaction upon firing of missiles are unacceptable as they do not consider the possibility of bringing the offender to a fair trial at the court which could be classified as a crime committed against humanity (Cummings, 2018). A decision to fire a machine leaves nobody with the responsibility for the actions and mistakes carried out by the machine. Should the soldier or engineer or the designer who commanded the machine to fire be made responsible for the actions of the machine be found to have made mistakes?

The long-term development of autonomous weapon systems faces a resistance that by removing the physical presence of the army from the risk and lessening physical and emotional harm to ordinary people the demotivation to use armed forces is reduced. There are arguments against the use of autonomous weapon systems as it is a problem, the use is not regulated, and the regulation will never be satisfactory. Some countries have as a result advocated for the ban of autonomous weapon systems and all the technology which can enable the use of autonomous war fares " (Anderson & Waxman, Adapting the Law of Armed Conflict to Autonomous Weapon Systems, 2014)." Autonomous weapon systems are classified as weapons of war, but IHL must not be the only legislature to govern them. IHRL rules also apply. (Brehm, 2017).

Some experts in the development of robots and the legal field have held that an autonomous weapon system that has the ability to sense information and distinguish legitimate targets similar to humans is impossible with the present level

of technology (Sassoli, 2014). William Boothby believes that the full autonomy of AWS is only visible in limited circumstances (Boothby W. , 2016). There are also certain conditions that have to be met before a weapon system can be considered autonomous. These include minimal frequency by the operator, tolerance for environmental uncertainty, and ability to change operating plan to complete an assignment without guidance (Marra & McNeil, 2013).

There are instances of war that cannot be envisioned by the programmers of AWS and, further questions whether it is possible for AWS to be programmed to adapt to circumstances that are not foreseen by the programmer (Sassoli, 2014). Noel Sharkey holds that translating legal provisions regarding IHL to computer programs seems impossible. However, he believes it is necessary if AWS will be utilized. This will entail the translation of IHL provisions into a computer language, which will be understandable to the computer. This problem can however be solved in the meantime if the application of AWS is restricted to environments without civilians " (Sharkey N. , The Evitability of Autonomous Robot Warfare, 2012)." There is also a belief that with the technological limitations of AWS it can only comply with IHL if there is still some certain degree of human control. Human control consists of predictability and reliability. This refers to the ability to estimate that a certain thing will happen in the future and, the quality of being trustworthy (Amoroso & Tamburrini, 2021).

Conversely, others claim that AWS is compliable to IHL. There is an agreement among contracting states to the Convention on Certain Conventional Weapons (CCW) that necessary human control must be used over weapons systems and the use of force. Schmitt holds that international humanitarian law's restrictions on the use of weapons are sufficient to protect humanitarian values when AWS is deployed. Thus, AWS will comply with IHL based on the present legal framework. Schmitt has high optimism for AWS and asserts that the necessary programming would most likely be attainable in its development to the point where it would be comparable to a human review in an identical situation. Schmitt holds that the real risk that could be associated with the use of AWS would be a potential infiltration by hackers (Schmitt M. N., 2013). In furtherance, Andrew and Waxman expressed that some of the world's best roboticists are developing algorithms to include the notions of proportionality " (Anderson & Waxman, Adapting the Law of Armed Conflict to Autonomous Weapon Systems, 2014)." Ronald Arkin stated that AWS couldn't be swayed to use excessive force than instructed, in comparison to

humans. This means the idea of proportionality could be consistently enforced. Arkin further states that the technology will advance to the point where it will be far easier for them to comply with the laws of IHL compared to humans (Arkin, 2009).

Predicting the outcome especially due to the complexity of its function will be quite difficult. The greater the uncertainty, the greater the risk that IHL might be violated. In carrying out a legal assessment whereby a human operator is intervening at all times, there is an assured level of predictability as the human operator is in compliance with IHL (Davison). This may be different for AWS as it carries out various tasks in a complex environment making it difficult to supervise it as it tends to change its functioning against different types of targets.

4. CAN AWS COMPLY WITH INTERNATIONAL HUMANITARIAN LAW?

Article 36 of Additional Protocol I to the Geneva Conventions obliges states in the "study development, acquisition or adoption of new weapons, means or methods of warfare to review whether their use would in some or all circumstances be prohibited by any applicable rule of international law." The current development of AWS has the potential of either acting as an extension of human soldiers or as a replacement for humans on the battlefield by autonomous agents. There is however a legal requirement to conduct a review of the new weaponry that we understood as to rely on the assumption of the existing principles of IHL that apply *ipso facto* to the new technological warfare developments.

The act of warfare or armed conflict has been an ever-continuing destabilizing event in the world, an event that often leads to major human rights violations, economic stagnation, and inhumane acts just to name a few. This has made countries come together to form international bodies in order to set rules and regulations regarding the act of warfare and armed conflict. Major provision regarding armed conflicts was established by the IHL, this law is of utmost importance as it monitors activities performed during an armed conflict or warfare in order to make sure those acts conform with its provisions. This is the major key regarding the rise of the autonomous weapon system, as there are growing concerns that the laws already established to govern armed conflicts, clearly apply to AWS but may be insufficient to cover armed conflict performed through the use of autonomous weapon systems.

When an international or non-international armed conflict arises, there are major principles that any state and the non-state actor must apply in combat operations, these principles form the core of IHL principles that bind every state around the world (Solis, 2021). The core principles that will be discussed in this article are the principle of distinction, proportionality, and military necessity.

The principle of distinction sometimes referred to as discrimination is the first out of the core principles that will be discussed in this article, this principle stipulates that parties to the conflict must at all times distinguish between civilians and combatants, further expatiating those attacks may only be directed against combatants and not towards civilians. Civilians in the context of armed conflicts are comprised of all persons who are not members of the armed forces, while combatants are members of the armed forces of a state, Additional Protocol I further extends the definition of combatants to include members of organised armed groups that fulfill the criteria outlined in Additional Protocol I, Article 43. Part of this criterion excludes medical personnel and chaplains. Article 52(1) of Additional Protocol I prohibits targeting civilian objects, which are defined as all objects which are not military objectives. The rule does not only refer to persons, but it also extends to objects.

Suggestions were raised, that an autonomous weapon system incapable of accurately distinguishing combatants and non-combatants may be used in a territory where no civilians could be endangered such as underwater, space, and desert, but then again there is a flaw to this suggestion because when persons are targets, any one of them may surrender making it unlawful and military unnecessary to target them (Sassoli, 2014, p. 327).

The principle of distinction also applies to the proper distinction between the civilian objects and military objectives. As for objects, the definition of a military objective depends on its "effective contribution to military action" and the "definite military advantage" the attack offers "in the circumstances ruling at the time" (Sassoli, 2014, p. 328). These are elements of what would be considered military objectives, during armed conflicts, there is a requirement to be aware of plans and overall development of a military operation, and machines cannot autonomously do that without constant human input.

The question of how well autonomous weapon systems work in distinguishing threats was demonstrated by the shooting down of the civilian Iran Air Flight 655

by USS Vincennes in July 1988. The civilian passenger jet was classified as an enemy and targeted by an automated Aegis system in the warship without the authorization of the crew. A similar scenario as demonstrated by (Singer, 2009) is during the invasion of Iraq, US Patriot missile batteries marked two allied planes as Iraqi rockets. (Sassoli, 2014, p. 327) argues that the world may not be technologically ready when it comes to "translating IHL into computer language" giving an example of how it might be difficult to automate an indicator that can distinguish "a civilian with a large piece of metal and a combatant with a riffle in plain clothes." Therefore, AWS can only be used where the targets are clearly distinguishable and proposes that without the necessary technology human beings must be involved in the process.

(Sparrow, 2015, p. 710) agrees with the above writers stating that even if a weapon system could reliably distinguish combatants from non-combatants, it may be difficult to make a distinction between legitimate and illegitimate targets. For instance, how can a robot spot the difference between a digging farmer and a combatant who planting an explosive device? Alternatively, how can a robot distinguish between a toy gun and a real gun, a tank which is located in a museum, or an abandoned tank in a civilian area? AWS will have to examine targets diligently because combatants often do not wear uniforms or insignia in contemporary armed conflicts and the farmers by day fighters by night dilemma illustrate that whether a person is directly participating in hostilities or not is not always that clear. (Ak & Avaner, 2019, p. 53) The writer is doubtful of the capabilities of AWS in these three circumstances, which involve reasoning at a high level of abstraction. To curb these challenges, several suggestions have been made including designing AWS that could contact and await orders from a human operator before selecting and engaging targets in order to maintain meaningful human control during the target selection process " (Crootof, A Meaningful Floor for Meaningful Human Control, 2016)." Robots can be programmed to target only weapon systems instead of humans and the shape and body temperature of targets could be identified by sensors in order to increase targeting capabilities. (Schmitt M. N., 2013). With highly advanced technology, it is possible to automate indicators that may distinguish combatants from non-combatants. However, this process requires a very high degree of caution, constant review, testing, and regulation to ensure that we get it right. Additionally, the degree of autonomy must be regulated as human control must be a constant factor.

The principle of proportionality provided in Article 51(5) (b) of the Additional Protocol I to the Geneva Convention (GC) forbids an attack that may be expected to result in incidental loss of human life, injury to civilians, damage to civilian objects, or a combination of both, that is excessive in relation to the tangible and direct military gain anticipated. For this to happen, there must be a mental operation that will require an assessment of projected military advantage and potential civilian loss. This thus necessitates sophisticated decision-making on the spot " (Geiss, The International-Law Dimension of Autonomous Weapons Systems, 2015)." In the case of (ICTY, Prosecutor v. Stanislav Galic, 2003), the International Criminal Court for the Former Yugoslavia established that the test for determining whether an attack is proportionate is whether a reasonably well-informed person could have expected the attack. An AWS will have to instantaneously determine whether an attack may be expected to result in civilian casualties or damage to civilian objects.

Proportionality is a necessary consideration in attacks on civilians, not on combatants, as typically combatants seek to maximize the damage on enemy combatants. The rule of proportionality comes into play when armed attacks result in more damage and excessive loss of life to civilians even when the target was towards enemy military objectives (Boogaard, 2015, p. 281). To simply put it, the main aim of the rule of proportionality is to reduce collateral damage during armed conflict. Concerning the autonomy weapon system conforming to the principle of proportionality, this may prove to be more difficult, because this principle would have to be translated into a computer program and the conceptualization of this principle has proven to be quite difficult even for humans. A machine would need clear criteria and a formula to calculate proportionality, (Jensen, 2020) shared this view that the greatest difficulty an autonomous weapon system will have in applying the principle of proportionality is not linked to the evaluation of the risks for civilians and civilian objects, but to the evaluation of the military advantage anticipated. These concerns are valid because for instance, armed fully autonomous drone swarms target moving military objectives in a city and each individual attack is proportionate. In this case, the combined attacks would increase the total damage, this then brings to the fact that an autonomous weapon system could therefore not be left to apply the principle of proportionality with human involvement in constant updating the computer system about military operations and plans.

The civilian loss may be acceptable in order to gain the anticipated military advantage such as the enemy target is a high-ranking leader of a non-state armed group therefore any kind of formula cannot be applied to the principle of proportionality. (Sharkey A. , 2019, p. 76) opines that "the principles of proportionality and military necessity are beyond the capabilities of present and near future robots and weapons systems." Decisions about military advantage and military necessity require "responsible accountable human commanders, who can weigh the options based on experience and situational awareness" " (Sharkey N. , Automating Warfare: Lessons Learned from the Drones, 2012)."

The international community should insist on the aspect of human involvement, control and or judgment contending that the rules that constitute it require interpretation, therefore guidelines such as these cannot be easily translated into the kind of programmatic language that a robot or computer system can follow. According to (Asaro, 2012, p. 2) "the very nature of IHL …. Presupposes that combatants will be human agents". As much as Asaro's argument may be true on the presumption that combatants should be human agents, it does not mean that intermediaries such as AWS cannot be used to lighten a load of loss of human life as long as some aspect of human control is maintained.

An important aspect of consideration is whether the principles of proportionality and military necessity are based on rational decisions or subjective judgments. An attempt to demystify this question will help in understanding whether AWS are indeed capable of complying with IHL.

AWS can be regulated under the current system of IHL. However, there are several grey areas as discussed above, which can be addressed if the interpretation for classification of AWS in law is discussed, accepted, and institutionalized. This interpretation will also include a system for allocating and attributing responsibility for their use. Be that as it may, there is a critical aspect of some degree of human control that must be preserved when it comes to the design and use of AWS. Autonomy in the critical functions of the weapons and systems is acceptable, but it requires certain limits and constraints, which must be subsumed under the notion that human control, whether characterized as meaningful, substantial, or effective.

5. ACCOUNTABILITY

One of the main issues which have resulted in many objections to the use of AWS is the perceived lack of accountability that might arise where casualties' result from

its usage. Practically, there is bound to be a human involved to give a command to an AWS whom accountability can be attributed to, but the autonomous nature of AWS shows that there might be certain obscurity in attributing liability. Liability under international law can be applicable to individuals, state and/or corporate bodies. The liability can be either criminal or civil. With regards to civil liabilities there will likely be less debate on whom will incur liability, where there has been a violation of international in relation to the use of AWS. However, there is bound to be serious legal conundrum where an issue on criminal liability arises.

It imposes a duty to take moral and legal obligations for actions and decisions especially during exercise of power. In international criminal law, *mens rea* is crucial for any prosecution and therefore, it's a requirement that a sense of personal blame is absent if the accused did not intend for that act or omission to occur. Crimes or accidents occurring during the war because of the use of AWS, the actions and decisions of human operators must form part of accountability. "Human responsibility for decisions on the use of weapons systems must be retained since accountability cannot be transferred to machines."[1] However, in autonomous technology, the preclusion of human supervision and control proves the existence of *mens rea* as impossible to establish thus if power is transferred to machines during warfare, the moral agency of the war fighter is reduced and thereby undermining its accountability.

In international law, remedies available to an aggrieved party against a state can be covered under the principle of state responsibility. A state can be held responsible for IHL violations which arise from the use of AWS (Davison). Article 4 of the International Law Commission (ILC) Articles on State Responsibility provides that, states will be held accountable for the actions of their organs. Thus, if an AWS of a state commits a war crime, then the armed forces of the state will be held liable (Geiss, 2015). The legal principles of strict liability and breach of duty could be applicable in this scenario. "The ICRC's Commentary on the Additional Protocols to the Geneva" Convention establishes that strict liability could arise regardless of fault if an injury results from the dangerous actions of a state " (International Committee of the Red Cross, 1987)." This form of liability is the most realistic means of ensuring accountability with states.

[1] Guiding Principle (d) quoted from CCW Convention, Annex IV.

Breach of duty is the other likely option for assigning liability to the state. The four Geneva Conventions (Article 1) prescribe an obligation of due diligence on party states. Thus, they have a duty to respect and guarantee compliance with the Conventions in all circumstances. This provision appears applicable to the AWS. The overall need to maintain respect can be translated into a duty to continuously monitor and oversee the utilization of weapons in the course of conflicts " (Geiss & Lahmann, Autonomous Weapons Systems: A Paradigm Shift for the Law of Armed Conflict?, 2018)." Failure to do so can then make them liable for breach of duty.

Regarding individuals, there might be certain complexities when it comes to accountability because the liability that usually relates to individuals in IHL are criminal in nature. Criminal liability in these instances will depend on the facts relating to the level of autonomy exercised in each case. For example, a programmer or commander who configures or activates an AWS to be used for the violation of IHL would undoubtedly be held criminally liable. Further, a commander who activates a weapon to be utilized, without being able to reasonably predict the outcome, will equally be held liable on account of recklessness. These are all simple instances that do not create a problem in the attribution of liability.

However, problems will emerge when all persons involved presume that the weapons system is working correctly and do not set out to harm people who are protected. As such in an instance where an AWS was activated and, the programmer involved does not have knowledge of where the weapon will be deployed and, the commander who activated the weapon does not know the location and exact time the attack will take place since the weapon acts independently. Ascribing criminal responsibility to either the programmer or the commander might prove difficult. A probable chance of assigning liability to the programmer might however be possible on grounds of negligence for lack of predictability " (Geiss, The International-Law Dimension of Autonomous Weapons Systems, 2015)."

The Hague Convention of 1907 and the 1949 Geneva Conventions create a duty for commanders to ensure that their forces act in conformity with the general principles of the respective Conventions. It creates a responsibility for superiors regarding the acts of their subordinates. This requires that a commander be aware that his subordinate would commit a crime. In reality, it will be impossible to apply

this provision to a robot. The law further shows that a commander's liability simply decreases as the system's level of autonomy increases (Kraska, 2021).

Furthermore, it might also be possible for liability to pass onto corporate bodies. In the case of AWS, this will imply that manufacturers will be held liable for certain IHL violations that arise due to the system's malfunction. This liability will certainly be civil in nature. However, under the existing framework of the IHL, such provisions do not exist. Furthermore, with the way international conflicts take shape, victims will rarely be in a position to file suits against AWS manufacturers due to the location of these companies (Malik, 2018). Anderson and Waxman called for strict liability for manufacturers who produce AWS " (Anderson & Waxman, Adapting the Law of Armed Conflict to Autonomous Weapon Systems, 2014)."

States must be accountable for unlawful acts committed with any type of weapon. Where there is no promise of accountability, stopping off a humanity crime is reduced leading to lower protection of humans and potential of war crimes. The modern concept of human rights is fundamentally based on the principle that the states which cause violations must be held accountable and answer for their actions. As a result, a failure to bring to book those who commit these human rights violations is also a serious offense as it lets down the victim's right to life and is also regarded as a violation of human rights (Ulgen, 2020). People who are brought to accountability in the event of an autonomous weapon system casualty include those who are responsible for the production and deployment of AWS and the violation of IHL includes software engineers, producers of hardware for the machinery, political leaders (McDougall, 2019).

The US Department of Defensive Directive 3000.09 (Defense, 2012) indicates that people who permit the use and operations of autonomous and semi-autonomous weapon systems must do it with care and due diligence bearing in their minds that they will be individual accounts according to the law of war, agreements, safety, and precautionary rules. According to the Joint Doctrine Note 2/11 on the United Kingdom (Defence, 2011) approach to unmanned aircraft systems hold that the responsibility for any army activity rests with the individual who made and issued the last command permitting that activity.

Another commendable way of enforcing accountability is to make companies that manufacture and sell these autonomous weapon systems criminal accountable

for their actions (Chengeta, 2016). Some jurisdictions have heeded the call of corporate criminal liability some countries that have companies that produce AWS have laws that punish organizations (Crootof, War Torts: Accountability for Autonomous Weapons, 2016).

6. THE ETHICS AND MORALITY OF ROBOTIC WARFARE

The Martens Clause which states that if there is no specific law civilians and combatants should remain under protection of the principles of humanity and public conscience (Meron, 2000).

"The International Committee of the Red Cross (ICRC) (Autonomous Weapon Systems: Implications of Increasing Autonomy in the Critical Functions of Weapons, 2020)" has laid emphasis of the importance and the necessity for human beings to maintain a certain level of control over the weapons in order to fulfill ethical issues as well as to ensure that the international law concerning the weapons system is followed accordingly.

Compliance with IHL must be guaranteed by States before deploying these weapons systems because AWS violates the principle of protection of human dignity as autonomous targeting objectifies human beings to algorithmically processed data points denying human beings of their inherent value hence, they undercut the underlying structure of IHL.

Certain parts of human life should be off-limits to robotic decision-making, particularly since the issue being discussed is centered on autonomous weapons within the confines of war, when it comes to a life-or-death situation, specifically if it involves non-combatants / civilians, some parts of human life should be off limit to the machines.

It goes without saying that, with the weapons not having full autonomy, the human beings in charge of the machines or weapons should have the sufficient understanding of the mission, what is needed to complete the mission and the other important details, so as to avoid errors or at least to keep it at a bare minimum.

Strict requirements should be put in place, requirements such as human supervision, intervention and deactivation protocol, the human being in charge should be able to override the actions of the weapon / the robot. Some of the leading developers in artificial intelligence and machines have on numerous occasions buttressed the point and the need to ensure human judgement as well as

human control, especially in sensitive applications such as situations involving people's lives, especially civilians (UNIDIR, 2014).

Owing to the fact that the machines / the robots (autonomous weapons) dehumanize the potential targets, that in itself goes against the concept of human rights. Dehumanizing the targets which are human beings can be seen as a violation of human rights, given that the human life is in fact valuable and a machine being able to end one on command can be seen as somewhat unethical, take into account the just war theory.

According Heyns, "decisions over life and death in armed conflict may require compassion and intuition." " (Heyns, Report of the Special Rapporteur on Extrajudicial, Summary or Arbitrary Executions, Christof Heyns, Lethal Autonomous Robotics and the Protection of Life, UN Human Rights Council, A/HRC/23/47, April 9, 2013, 2013, p. 55)" Going by that, compassion and intuition are two things' machines however accurate, do not possess, thus should not be given full autonomy and access to all parts of human life. More so, the issue of whether or not the military should kill someone is rather subjective and not objective and so it should be left to a human being, and not a machine.

Taking human dignity into account, one could argue that it comes from a sentimental point of view, the reason being that, getting killed either by a machine / a weapon or getting killed by a human being does not change the fact that a life has been ended, not forgetting the obvious fact that anyone in the war zone knew or was aware of the risks involved before consenting to sign up in the first place, this, of course, does not include civilians caught in a crossfire.

Given full control of the AWS, human beings will become less relevant, especially when it comes to the issue if morality and judgement calls in the time of war or in war zones and such.

Taking the Human Rights Watch report into account, Goose was of the opinion that "fully autonomous weapons would also undermine human dignity, because as inanimate machines, they could not understand or respect the value of life, yet they would have the power to determine when to take it away" (Goose, 2017, p. 33). Every human being has worth, and they should be respected, a robot could not possibly understand this concept, therefore, respecting or valuing human life is impossible, as well as comprehending the concept and the gravity of loss, in an event of death.

Essentially, giving the whole control to a machine or a robot when it comes to issues regarding the life of human beings, i.e the robots deciding when and which human life to end would rather debase the significance given to such a crucial matter, as well as cheapen or demean human beings as a whole.

Likewise, " (Heyns, Autonomous Weapons in Armed Conflict and the Right to a Dignified Life: an African Perspective, 2017)" posed a question, "Is it not affront to human dignity if robots have the power of life and death over humans". Basically, these weapons would objectify the human beings, they are simply just targets or objects to be destroyed. More so, when the robots do all the work such as making all the decisions without any interference from human beings, it strips away the ethical element from the situation, by not giving the human beings the chance to make ethically or morally sound decisions, then the human dignity is more or less jeopardized.

In addition, the robots or weapons are programmed and designed to play it by the book, they follow the program / instructions without question and by so doing, there is no room for empathy, considering it is a machine, it cannot be moral or ethical, dealing with human beings as mere objects in itself goes against the concept of human dignity.

Relying on (Asaro, 2012, p. 708), in order to preserve the concept of human morality, justice and law then the AWS should not be encouraged or accepted, he concludes on the note that "As a matter of the preservation of human morality, dignity, justice, and law, we cannot accept an automated system making the decision to take a human life."

As with any concept, the idea of human dignity is not without some criticisms, according to (Saxon, 2013), he is of the opinion that the use of weapons should not be seen as a violation of human dignity due solely to the weapons autonomy. Regardless of how one is killed in the war, human dignity is compromised either way so long as it is war, due to the fact that, at the end of the day, human beings are being killed and sacrificed in order to achieve military goals or targets.

Taking into consideration (Birnbacher, 2016), he is of the opinion that the concept of human dignity should be used when referring to a particular individual and not the entire human race at once. He also opposes the fact that the idea of human dignity has been regarded as the same with the concept of morality, going

by that definition, it would mean that any immoral act would essentially be against human dignity, and this is not so.

It is a given that going to war comes with a lot of risks on its own so the concept of human dignity here should be more on a non-combatant / a civilian, then one can agree that the human dignity of that civilian was affected.

Consequently, in theory, fully autonomous weapons may seem like a good idea, however, when it comes to practice, in reality it may not always be the same, as real-life scenarios are not planned or the same all the time, it can be in different ways, but the machine is programmed in a particular way. Going by the definition of the United States Department of Defense (DOD) (Defense, 2012), "a weapon system that once activated can select and engage without further intervention by a human operator", fully autonomous weapons could be uncontrollable, prone to errors and unable to operate predictable if they do, they cannot be held accountable considering they have difficulty differentiating between combatants and non-combatants in some cases, how accurate will this be.

It can be agreed upon that human beings play an important and integral part in controlling the weapons and removing human control entirely from the process of identifying the target to firing, can be seen as ethically and or morally flawed, and in warfare should not be removed from the process, so giving or delegating the decision to kill or giving the machines an all access pass to every aspect of human life would be very dangerous on the long run.

7. RECOMMENDATIONS

This study is a review of literature on autonomous weapon systems (AWS) or killer robots, resulting in the design of analysis to examine the incentive and implementation questions posed. The objective is to provide concrete evidence for strategies that advise the selection of data when making decisions on whether or not to use AWS. Policymakers in the ministries of Foreign Affairs, Defense, and Economic Affairs who work with security and emerging arms technology and must negotiate with international entities can use this information to develop standards for legal and ethical boundaries and in doing so, facilitate policy-making and frame actionable steps.

The body of literature defines both domestic and international goals for policy making. This study, therefore, is even more critical today than in the past, to support international interactions and relations.

At the domestic level:

Review conformance, develop guidelines, and regularly update regulations to ensure and safeguard legal compliance: In order to establish national standards, it is important to pay special attention to the early stages of the life cycle when applying international humanitarian law (IHL) to AWS and related technology.

Establish norms and procedures: Delineate rules for context-specific Codes of Conduct for private players and specify the main objectives and aims of procured and produced military technology. Determine desired and undesirable results, as well as (technical) fixes to make these results more verifiable and explicable;

Align subcontractor work to military requirements: Continually evaluate a platform's predefined settings and attributes to make sure production meets the needs of the environment in which the AWS will be deployed.

Increase politicians' technological literacy: Make sure that scholars and military leaders driving discovery, development, and deployment regularly collaborate. Introduce technical subject matter experts when needed to identify gaps and aid in the comprehension of the technological requirements that underpin policy;

Increase the level of engagement among military personnel: Collaborate with AWS manufacturers, subcontractors, and legislators to make sure that legal protocols, technological standards, and military frameworks are all fully integrated.

At the international level:

Encourage general adherence to the law: In particular, encourage adherence to the legal review of weapons under Article 36 by explaining how international powers use AWS and comparable systems.

Set a good example: Promote the adoption of ethical concerns in the development of technology and regulations that are consistent with current global legal provisions; promote the worldwide deployment of locally established principles and norms for the development and application of AWS;

Increase openness to promote international harmony and understanding, share the learnings from developing guidelines, standards, and rules for AWS and related technologies with other nations and national populations.

Promote benchmarks for systems that are relevant to the defense industry and minimize the costs associated with the verification and validation of AWS technologies by creating a coalition of states to exchange best practices.

Encourage the development of scholarly communities: Encourage and strengthen a global epistemic community to enable the sharing of legal and technological information and to support knowledgeable international policymaking. Create links between academia and business to aid in the conversion of legal and ethical guidelines into technological standards and frameworks.

This complex set of actions can have global implications for the political landscape and can influence policy throughout the world.

CONCLUSION

AWS does not exist yet, however, human decision-making process is gradually being replaced by the artificial decision-making process. Therefore, those who plan to carry out an attack using AWS must therefore ensure that the weapon system and the way it is used preserves their ability to make legal judgements and thereby ensuring compliance with IHL. AWS still raise concerns through its designs, performance, and method of use and how it impedes commanders or operators in making these legal judgments.

An overview of present IHL provisions shows that it is designed to be applicable to humans, and in the case of weapons, it addresses those who produce, program and use them. Generally, all obligations under international law and accountability for them are not ascribed to machines and computers. Although, those who use them have an obligation to ensure that they operate in compliance with IHL. To achieve a reasonable level of compliance with IHL, AWS will have to be improved to understand the principles and provisions of the IHL and work within its framework. Such improvements will have to go as far as developing the intelligence of the system to be able to differentiate a target from a non-target in important and risky situations. For instance, where a combatant surrenders and seizes to be a military target. The system must be able to understand such change in status. Only then can an AWS be said to be fully compliant with IHL. Furthermore,

the provisions of the IHL will have to be reviewed to include AWS. This will entail introduction of express provisions that will regulate its usage and in particular, create a minimum standard of intelligence, before for it can be used for military operations.

This new technique of combat that does not include humans is highly complicated since it poses problems about accountability in the event of damage and whether it adheres to the standards of IHL, which are proportionality, distinction, and necessity. No fully autonomous weapon systems have been deployed or employed.

Action is required to develop a shared understanding of what is appropriate when using force via the AWS. Control over the use of weapons, as well as responsibility and accountability for repercussions, are critical to the governance of force and the preservation of humanity. Upholding human dignity requires that killing power not be assigned to a computer; rather, the choice to terminate someone's life must stay with humans.

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