



ROBOTİK DEVRİM: YAPAY ZEKA ULUSLARARASI YA DA ULUSLARARASI NİTELİKTE OLMAYAN SİLAHLI ÇATIŞMAYI TETİKLER Mİ?

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Öz

Yapay zekalı askeri silahların, özellikle de otonom silah sistemlerinin yeni formlarının piyasaya sürülmesi, insan müdahalesi olmaksızın hedefleri seçebilmekte ve yok edebilmektedir. Bu nedenle modern ordular tarafından yapay zekâ ile birleştirilmiş ölümcül otonom sistemlerin aktif olarak kullanılmaya başlanması silahlı çatışmalarda devrim yaratmıştır. Yapay zekanın askeri uygulamalarına ilişkin temel endişe, kuvvet kullanımının yalnızca insan askerler tarafından sürdürülmesi gerektiğidir. Yapay zekâ teknolojisinin sınır kontrolü veya gözetleme operasyonu sırasında istemeden de olsa savaşa neden olma olasılığı nedeniyle uluslararası silahlı çatışmayı tetikleme eşiğinin yeniden yorumlanmasına acil ihtiyaç vardır. Bu makale ağırlıklı olarak, insan unsurunun belirli kuvvet kullanma uygulamalarından çıkarılmasını ifade eden tam otonom silah sistemlerine odaklanmaktadır. Bu makalenin temel araştırma soruları şunlardır: Birincisi, otonom bir silah sisteminin tek başına uluslararası bir silahlı çatışmaya yol açarak uluslararası insancıl hukukun uygulanmasını sağlaması mümkün müdür? İkinci olarak, otonom silah sistemleri devlet dışı silahlı aktörler tarafından kontrol edildiğinde uluslararası nitelikte olmayan silahlı çatışmalara yol açan silahlı grubun örgütlenme ve yoğunluk kriterleri karşılanabilir mi? Bu çalışma otonom silah sistemleri hakkında uluslararası hukuk alanında yürütülen ana tartışma alanları olan yapay zekanın insancıl hukuk ilkeleriyle uyumluluğu ve uluslararası sorumluluğun belirlenmesi, etik problemler tartışmalarına da odaklanarak araştırma sorularına yanıt aramaya çalışacaktır.

Anahtar Kelimeler : Devlet Dışı Silahlı Aktörler, Otonom Silah Sistemleri, Yapay Zekâ, Uluslararası Nitelikte Olmayan Silahlı Çatışmalar.

JEL Sınıflandırılması : K33.

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ROBOTIC REVOLUTION: DOES ARTIFICIAL INTELLIGENCE TRIGGER INTERNATIONAL ARMED CONFLICT OR NON-INTERNATIONAL ARMED CONFLICT

Abstract

The introduction of new forms of artificial intelligence (AI) military weaponry specifically autonomous weapon systems (AWS) can select and engage targets without human intervention therefore the application of lethal AWS incorporation with AI has revolutionized armed conflicts. The main concern regarding the military application of AI is the use of force should be maintained by only human soldiers. There is an urgent need to reinterpret the threshold for triggering an international armed conflict because AI technology unintentionally causes war during border control or surveillance operation. This article predominantly focuses on fully autonomous weapon systems which refer to human agents being removed from certain force applications. The main research questions in this article are first, is it possible that an AWS might, alone, spark an international armed conflict, thus bringing international humanitarian law into force? Second, can the criteria of organisation and intensity that give rise to non-international armed conflicts be met when AWS are controlled by non-state armed actors? This study will examine the research questions by focusing on the main areas of debate in the field of international law on AWS, specifically the compatibility of AI with the principles of humanitarian law, the determination of international responsibility, and ethical problems.

Keywords : Non-State Armed Actors, Autonomous Weapon Systems, Artificial Intelligence, Non-International Armed Conflicts.

JEL Classification : K33.

INTRODUCTION

Artificial intelligence-based autonomous weapon systems (AWS), which are referred to as the third major change or transformation in wars after the invention of firearms and atomic bombs, radically change the typology of armed conflicts. When we examine the definitions made to determine the characteristics and capabilities of autonomous weapon systems; according to Asaro, autonomous weapon systems refer to weapon systems that have the ability to identify and engage in a potentially fatal attack with no need for human involvement or supervision in the decision-making process (Asaro, 2012: 690). Horowitz and Scharre defined autonomy in its most straightforward interpretation as the capacity of a machine to operate autonomously without a human element. In this context, autonomous systems are systems that perform some software or hardware tasks or functions autonomously after activation (Horowitz & Scharre, 2015: 5). According to The Department of Defense of the United States, the classification of autonomous weapon systems is determined by the role of human control. Accordingly, the systems are divided into three different groups. First, semi-autonomous weapon systems. Second, autonomous weapon systems with human supervision, and third, fully autonomous weapon systems (U.S. Department of Defense, 2012: 13). Once they are activated, semi-autonomous weapons can only target the individuals selected by their human operator. Autonomous weapon systems with human supervision are weapon systems in which the person in control is authorised to intervene and terminate the target engagement process when a malfunction of the weapon system occurs. Finally, once fully autonomous weapons are activated, they can identify and attack targets without requiring any further human intervention (U.S. Department of Defense, 2012: 14). This study focuses on fully autonomous systems without human control.

In the literature, discourses on weapons that can function independently are centred on whether they are compatible with international humanitarian law. However, this study will examine whether non-international armed conflict or international armed conflict can arise when autonomous weapons are used by states or non-state armed actors. This article consists of three parts. The first part will analyse the issues raised by weapons that operate independently or with minimal human intervention in terms of international law. The second part will determine when and under what circumstances armed

hostilities can arise on both the international and non-international levels. It will then investigate the question of whether the utilization of autonomous weapon systems could lead to an armed conflict on either the international or non-international level. The third part consists of conclusions and recommendations.

I. HOW INTERNATIONAL LAW ADDRESSES THE USE OF AUTONOMOUS WEAPON SYSTEMS

Roboticians, lawyers, and ethicists have divided into two groups over the past few years: Those who agree AWS can adhere to international humanitarian law (IHL) (optimists) and those who do not (pessimists) (Lieblich & Benvenisti, 2014). According to prominent optimists, it is possible to modify IHL such that it can take into account AWS's unique characteristics, even though they pose challenges to the current legal system (Anderson, Reisner, & Waxman, 2014). However, the group of pessimists maintains that the nature of AWS precludes it from ever being developed or implemented in a manner that complies with IHL (Asaro, 2012).

The pessimists will not complain if certain IHL ideas are applied to AWS. For instance, everyone would concur that it is a nation's responsibility to examine the extent to which a new weapon may violate international law when developing or procuring it.² The principle of individual criminal responsibility, proportionality, command responsibility, and distinction are some additional fundamental tenets of IHL that have been the subject of argument among legal pessimists and optimists.

The core IHL standards of distinction and proportionality are arguably the most hotly contested and contentious aspects surrounding using AWS. According to the notion of distinction, participants within a war must delineate between non-military individuals and fighters and between non-military objects and targets that are of a military nature without interruption.³ The proportionality principle forbids any attack that can reasonably be anticipated to result in inadvertent injury or death of civilians, harm to non-military assets, or a combination of those things, which is deemed excessive to the concrete and immediate benefit gained.⁴ AWS sceptics assert that no plan or program is currently in place, or will be in the future, that will enable AWS to adhere to these essential principles.

The pessimists contend that AWS lacks the programming, detectors, or other capabilities needed to discern between fighters and non-combatants or to recognize injured fighters, ceasing resistance, or otherwise out of the fight (Sharkey, 2012: 788). The pessimists use the following strong language to explain the purported incapacity of AWS to differentiate between fighters and civilians:

For instance, a scared woman might chase after her kid and scream "Don't play with your wooden gun" next to a soldier. A fully autonomous weapon may simply see an angry individual running toward it, while a soldier who is a human being can relate to the woman's anxiety and the child's activity and, as such, acknowledge the intent as benign. The latter would not open fire, while the former may (Docherty, 2012: 32).

Although AWS optimists do not assert that AWS can be structured to fully align with the principle of distinction, they argue that technological advancements have reached a point where AWS does not inherently violate IHL. For example, an analyst points out that AWS might actually adhere to the distinction principle because contemporary sensors are able to, among other things, evaluate an object's size and shape, calculate its speed, recognize the method of propelling the object, ascertain the composition of the material it is made from, pay heed to both the environment and object, and monitor any electronic emissions or transmissions linked to the object (Schmitt, 2013: 11).

Pessimists are also doubtful that AWS can adhere to the proportionality principle. According to Human Rights Watch, for instance, it is exceedingly improbable that autonomy is a potential feature for a robot to manage the countless situations that it may encounter; instead, a robot would have to analyse

² Article 36 of the Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (June 8, 1977), also known as Additional Protocol I

³ The sections of the law outlined in Art. 48, 51(2), and 52(2).

⁴ The provision set forth in Article 51(5)(b).

a situation instantaneously (Docherty, 2012: 32). However, optimists consider scenarios in which AWS might adhere to the proportionality principle, especially applicable when individuals are not at immediate risk of harm (Anderson, Reisner, & Waxman, 2014: 402).

The discussion on how AWS can be employed legitimately in the contemporary battle zone, including how they will be required to adhere to the proportionality and distinction principles, would be significantly advanced by bringing together renowned experts in AWS, robotics, and a non-contentious and impartial series of meetings to discuss international law.

By focusing on the principles of proportionality and distinction, it becomes clear that the dire and baseless scenarios often highlighted by those with a negative outlook, like a mother chasing her child who is playing with a toy gun, as a narrow and emotionally charged assumption that fails to provide meaningful insight into intricate legal matters. People who tend to emphasize the worst-case scenarios downplay scenarios in which AWS could be used legally without endangering the differentiation and proportionality criteria. According to them, the sole type of autonomous weapon system that will be produced are those similar to the Skynet, which will patrol cities while mixing with both soldiers and civilians.

An AWS examination process, on the other hand, would clarify the utilization of IHL to AWS during realistic scenarios of armed conflict, such as scenarios where permissive conditions are present, like a tank formation being targeted in a remote desert area or naval vessels targeting the high seas areas that are far away from commonly travelled shipping routes (Schmitt, 2013: 11). An AWS handbook could assist in establishing the standards that would apply to AWS in the various forms in which they may be deployed, as opposed to focusing on the pessimists' constrained and implausible hypothetical scenarios. In fact, such a guideline might conclude that, given existing technology, using AWS in a situation where civilians and combatants are intermingled would be against international humanitarian law. However, this does not imply that the use of AWS in any other circumstances would also be illegal.

AWS, like every other weapon system, must always distinguish between civilian, civilian objects, combatants, and military targets. Additionally, an AWS could be prohibited from being employed in an attack when the anticipated fatalities or destruction of non-combatant property could be disproportionate to the immediate tactical benefit.

Shots fired by a sniper downrange, an artillery barrage, or a warship launching a Tomahawk cruise missile is authorized. In accordance with IHL, judgments related to proportionality and distinction are typically taken at or close to the point at which a weapon is discharged or put into action. The same argument indisputably applies to AWS.

The targeting and timing issues have been framed inaccurately by AWS pessimists. Pessimists want the discussion to focus on whether it is acceptable to let the law decide when to employ lethal force in a particular situation. According to one pessimist, AWS mark a significant transformation in military capabilities, as they remove human judgement from the use of fatal force (Asaro, 2012: 693). It is believed that it is undesirable for robots to regulate, decide upon, or apply force or violence during the war (International Committee for Robot Arms Control, 2010). Christof Heyns presents a rhetorical question about whether it is or is not unethical for machines to choose who and when to kill (Heyns, 2013: 92).

According to the pessimists, AWS must be prohibited since machines shouldn't be allowed to decide whether someone will live or die. But under IHL, the choice to employ lethal force is made by military leaders and soldiers on the front lines, not by weapons systems. The proliferation of autonomous weaponry, specifically that which is autonomous in its essential elements, carries implications that decisions regarding lethal force becoming more dehumanized. Machines are not mortal and neither do they have moral capacity, thus they must not have the power of life or death over human beings. Machines cannot comprehend how important life is, nor the consequences involved in ending it. Although the same may justifiably be said of certain human beings, it is impossible that any machine could ever have this capacity. Simply put, only humans can take decisions over the life or death of other humans. In this argument, any decision regarding the deployment of lethal force without any form of meaningful human control must by nature be arbitrary, and so any deaths resulting represent an illegal killing (Evans, 2014: 712).

If human beings, including combatants on the battlefield, can be killed by an algorithm, with a target becoming simply a zero or a one in a digital code, operated by a machine that cannot take moral decisions, that clearly undermines the right to dignity. If a person is killed in this way, their death is no different to any other person who finds themselves within the target area of the autonomous weaponry. Restricting the deployment of force is not only about reducing the numbers killed, it is also concerned with protection for every single individual and valuing their life and dignity.

A notable example is the Dual Mode Brimstone anti-armor missile that the Royal Air Force now employs. To ensure accuracy, the Brimstone incorporates advanced millimeter wave and semi-active laser radar guidance systems that enable it to target only vehicles that meet a predetermined signature, while avoiding non-target vehicles such as cars and buses (Army Technology, 2021). Each Brimstone missile can target a specific armored vehicle moving in a column by being fired in a volley with other Brimstone missiles (Markowitz & Gresham, 2012). The Brimstone missile's programming enables it to locate, pick out, and employ fatal force against a target; yet, the missile is neither making a decision to kill or considering differentiation and proportionality. The choices and evaluations were either made during the planning stage of the mission or by the pilot responsible for initiating the missile strike.

If Brimstone missiles are considered “precision-guided munitions” by AWS rather than AWS, it only raises the possibility of further autonomy. Imagine a scenario in which a MQ-9 Reaper unmanned aerial vehicle, employed in a situation of armed conflict with a significant number of Brimstone missiles at its disposal, is outfitted with the same sensors and guidance systems as the Brimstone. The Reaper can independently scan a significant combat zone to spot a convoy of hostile armored vehicles. At that point, it could launch one or more missiles without further human input. In this hypothetical scenario, neither the Brimstone missiles nor the Reaper have any authority to decide on distinction or proportionality; instead, all decisions are made by the commander responsible for launching the Reaper.

Contrary to the pessimists' assertions, an AWS manual might make it plain that only human commanders and operators who use AWS decide whether to kill. The application of IHL to AWS would significantly advance if the temporal targeting issue could be settled, and the threat of killer robots deciding between life and death would no longer be a topic of discussion. Most accepted practice in this area appears to be predicated on concepts that if human life or other significant entities are in question, there should be a dedicated human or humans who will take the decision and will be responsible for the consequences. In other words, there must be deliberative human decision-making or, in the same vein, meaningful human control. Furthermore, there must be some capacity for someone to be held accountable (Sparrow, 2015: 728).

In March 2014, a meeting on AWS was held in Geneva by the International Committee of the Red Cross (ICRC), which was attended by delegates from 21 countries, including the United States. During the meeting, a broad range of AWS-related topics were reviewed (International Committee of the Red Cross, 2014: 26). In May, the CCW's parties also convened informally to discuss the same issue. These sessions led to the creation of the term meaningful human control (MHC), which refers to the desired criteria for efficient operation for using AWS (United Nations Office at Geneva, 2014).

However, parties have yet to agree on a universal MHC definition. U.S. policy mandates that AWS be developed in a way that enables operators and commanders to apply the necessary levels of human discretion when employing force (U.S. Department of Defense, 2012), although the UK has declared that control over the employment of weapons systems would under all conditions be exercised by humans (UK Ministry of Defence, 2022). An IHL-compliant definition of MHC might be found in an AWS documentation, allowing AWS to be created, coded, and used in a lawful fashion.

The IHL principles that are already in place should offer a sufficient foundation in order to assess an operator or commander exercises MHC over AWS. In accordance with IHL, participants with a conflict are required to exhaust all reasonable means to confirm that military objectives are targeted and to halt or postpone an assault if the attack is not proportionate or if it recognizes a target as a non-military target.⁵

⁵ Additional Protocol I, at art. 57(a), (b).

It follows that the deployment of AWS in that situation would probably infringe IHL if a commander using AWS is unable to halt or temporarily suspend an assault when it is evident that continuing the assault would infringe upon the proportionality and/or distinction principles. A commander who uses AWS to attack a target without first making every effort to ensure that it is a military target is, likewise, breaking international humanitarian law. Regardless of how sophisticated the programming of AWS is, a commander cannot entirely rely on it to meet these needs in the context of AWS. The commander is considered to be exercising MHC over the AWS under his control.

IHL's command and state responsibilities as well as individual accountability principles are cited by opponents of AWS as barriers to its legal application. Individual fighters are historically held criminally accountable for their commission of war crimes, while superiors and commanders are held accountable for violations carried out on their instructions, as well as for failing to stop, suppress, or record violations of international humanitarian law.⁶ Critics who are pessimistic about AWS argue that the character of these systems undermines the traditional enforcement of international humanitarian law in situations where war crimes have been carried out.

The critics contend that AWS cannot be held responsible for committing war crimes using the conventional IHL paradigm. Heyns, a special rapporteur for the United Nations asked the following: Robots lack moral agency, making it impossible to hold them accountable for life loss in any way that would be identifiable if human decision-makers had been involved (Heyns, 2013: 76). Consequently, who is accountable? Pessimists emphasize the possibility that arms manufacturers or software programmers may be charged with crimes for the activities of AWS rather than specific fighters or commanders (Malik, 2018: 629).

The concepts of IHL pertaining to accountability when AWS are deployed illegally or when grave mistakes are made during their deployment could be made clearer with the aid of an AWS manual. In particular, an AWS manual would reiterate that the usage of AWS in battle is subject to the laws now in place on personal accountability and command responsibility. In other words, if a soldier uses AWS to perpetrate a war crime, they are criminally accountable for doing so, and if a commander orders the crime or does nothing to stop it, they are also criminally culpable.

The typical use of IHL is opposed by AWS pessimists because they believe it might not be equitable because the responsibility for war crimes may lie with the mission programmer, robot creator, or the high-ranking executives or legislators who opted to use it (Saxon, 2016). The argument states that since specific commanders and combatants do not comprehend the intricate algorithms and programming of AWS, they do not have the necessary state of mind required for criminal intent and should not be held criminally accountable for AWS's acts. To put it another way, if AWS are entirely independent, it is not fair to blame soldiers and commanders for any fatalities brought on by weapons outside of their control (Chengeta, 2016: 50).

According to pessimists, this leaves a void in accountability. However, this gap assumes that upcoming combatants and commanders won't be able to receive the necessary education and training to properly comprehend the AWS's potential. Heyns, the U.N. special rapporteur, acknowledges this issue and notes that it will be crucial to determine, among other things, whether military leaders will be able to comprehend the intricate programming of lethal autonomous robots on a sufficient level to warrant criminal culpability (Heyns, 2013: 78). What degree of expertise a combatant or commander needs to use and program AWS might be made clear in an AWS manual.

The inability to understand AWS's source code, however, cannot prevent it from being used in warfare. After all, modern warriors and commanders can not be expected to be specialists in the intricate programming of the weapons that are now used, such as the Brimstone missile, operate autonomously to a substantial degree. Combatants are not required by IHL to have completed advanced studies in robotics or software engineering. Instead, IHL mandates that commanders and fighters adhere to a criterion of rationality when deciding about the weapons of use and the way they use them.

The method used by a sensible commander who is considering the deployment of AWS can make a decision that would necessitate the commander exercising judgment about the system's

⁶ Art. 85–87.

capabilities, the contexts of deployment, and operations form and environment where system's proper function is assured (Beard, 2014: 653). With this clarity, responsibility, and accountability are assigned to the commanders and combatants, rather than to the AWS. Although these weapons comply with the objectives and procedures set by humans, they have a certain degree of autonomy of action due to their machine learning capabilities, which allow them to behave differently by learning from past mistakes. For this reason, it is argued in the doctrine that an operator need not understand the complex programming of the robot, but must understand the outcome, i.e. what the robot can and cannot do (Amoroso, 2017: 18). For example, Joint Doctrine Note 2/11 on the United Kingdom's Approach to Unmanned Aircraft Systems states that legal responsibility for the consequences of a military operation rests with the person who gave the final command for that consequence to occur (UK Ministry of Defence, 2011: 510).

While noting that they provide a unique challenge to conventional ideas of individual accountability, an AWS manual might establish new standards for the choice to utilize AWS. Beyond his/her knowledge with non-autonomous weapons systems, a soldier utilizing AWS may be expected to have a great deal more understanding of the behavior of AWS. Combatants may be expected to undergo specialized education on the use of AWS to properly comprehend their abilities, hazards, and limitations (Margulies, 2017: 437). In this way, if a combatant knowingly uses AWS in a way that is against IHL, it may be determined that he possesses the necessary level of *mens rea* to establish an accusation of violations of international humanitarian law.

Entrenched IHL principles dictate that a country's armed forces is accountable for committing war crimes. Since the state is fully accountable for violations committed by the state agents it has given some governmental authority to perform such acts, and the law governing state responsibility is comprehensive enough to cover all potential violations of international humanitarian law that could occur during the use of AWS, including those committed by individuals acting under the direction or control of the state, as well as private individuals whose actions the state acknowledges and adopts (Henckaerts & Beck, 2005: 149). Making complete restitution for the loss or injury suffered is the only way to place responsibility on a state for IHL violations.

IHL violations brought on by the use of AWS by a nation could be addressed in an AWS manual by restating the standard IHL principles of state accountability. It should not be a contentious issue to apply IHL to AWS in this specific way. The principle of due regard emerges as an important concept in determining the responsibility of the state arising from its negligence. According to this principle, states should be aware of the risk and take care to take measures to prevent harm to other states (Barnidge, 2006: 118). The ICJ has interpreted this principle to mean that states are under the obligation "not to deliberately allow their territory to be used for acts contrary to the rights of other states (Corfu Channel (United Kingdom of Great Britain and Northern Ireland v. Albania), 1949: 22)". In this case, as a result, states are under the obligation to ensure that the activities of private persons operating within their territory in relation to autonomous weapon systems do not cause harm to other states. It is still possible to claim that any harm generated by AWS is attributable to the state using them even if their behaviours are unpredictable or they malfunction.

II.COULD AN AUTONOMOUS WEAPON SYSTEM INDEPENDENTLY SPARK AN INTERNATIONAL ARMED CONFLICT, BRINGING INTERNATIONAL HUMANITARIAN LAW INTO FORCE?

According to IHL, an armed conflict is either international (IAC) and fought between states, or non-international (NIAC) and fought with or between armed groups (Fleck, 2014: 40). An IAC occurs whenever two states use armed force against one another, "regardless of the reasons or intensity of this confrontation" (Zegveld, 2002: 136). Conversely, a NIAC demands some intensity of violence and for at least one organized armed group to be involved (Sassoli, 2006: 8). The classification of a violent situation as NIAC comes with significant consequences. If a violent situation is deemed to be a NIAC, IHL comes into force. Indeed, IHL provides rules on detention and the use of force that differ from those

applied when a disagreement falls below the threshold of an armed conflict, such as those outlined by human rights law (Sandoz, Swinarski, & Zimmermann, 1987: 4461). This classification of violence also has implications for individual criminal liability and for other legal areas such as refugee law.

According to the International Criminal Tribunal for the former Yugoslavia (ICTY), an “armed conflict exists whenever there is a resort to armed force between States or protracted armed violence between governmental authorities and organized armed groups or between such groups within a State” (Prosecutor v Tadić, 1995: 70). This assessment is referred to as the *Tadić* test. The stipulations on intensity and organization are now seen to reflect customary international law. This section will consider whether or not the use of AWS by armed groups could have legal implications, triggered when the situation constitutes a NIAC.

II.I. International Armed Conflict

AWS critics often discuss the idea that these systems might “accidentally trigger a war” (Krishnan, 2009: 152). One might consider, for instance, the example of a sentry-AWS used in a peacekeeping role on an international border. The targeting rules, weapon range, or sensors might not be capable of preventing it from attacking foreign combatants. With human agents removed from certain force applications, is it possible that an AWS might, alone, spark an international armed conflict (IAC), thus bringing IHL into force? This debate is also encountered when discussing the matter of non-international armed conflict (NIAC).

Most legal scholars agree that any non-consensual military operation of a state’s armed forces within another state territory “could constitute a unilateral and hostile use of armed force meeting the conditions” of IAC (ICRC, 2016: 241). Indeed, the general consensus is that there is no specific level of intensity at which IHL of IAC starts to apply (International Law Association, 2010: 2). According to Carron, any hostilities that trigger an IAC must include the use of inter-state armed force, irrespective of any armed resistance. Carron explains that there is no requisite duration for the hostilities and that acts of violence do not necessarily need to be repeated. She does, however, stipulate that in order to trigger IAC, these acts of violence must result in violent effects (Carron, 2018: 1041). Such violent effects include material damage, serious damage to vital infrastructure, death or injury. As such, this does not apply to territorial incursions, airspace infringements, foreign military surveillance, or border incidents that do not involve armed force (Roscini, 2014: 136).

Indeed, it is clear that the actions of an AWS could constitute the use of armed force and they cause physical harm. It is less apparent whether the cause and intent of these actions would be satisfied with less human connection to the use of force. To spark an IAC, this use of force must be applied by state agents or those acting on state authorization. Further, there must be a clear causal link between the use of force and the state’s intent to enter into conflict with the other state. Typically, this *animus belligerendi* is indicated in state instructions to its agents. Despite being subject to some debate, it seems that situations resulting from mistakes or *ultra vires* acts would not trigger an IAC. This view is shared by the ICRC.

It is particularly difficult to establish the *animus belligerendi* when violent acts make use of weapons with displaced or deferred effects, such as those which are “victim-activated”, being triggered by the contact, proximity, or presence of a person or vehicle.⁷ In the case of mines, the act of laying a mine does not, alone, trigger IAC. This is because the laying of a mine does not, itself, produce any violent effects. It is also possible that the later detonation of that mine may not spark an IAC either, with the causal link to intent being too remote (Grimal, 2014: 5).

According to a number of commentators, it is difficult to attribute AWS acts to a state because its effects can be causally, temporally, and geographically remote from the decision to use force. Without this attribution, states cannot be held responsible for international legal violations caused by an AWS (Chengeta, 2016: 49). Accepting that there must be a close causal link between a state’s intent to enter into conflict with another and an act of violence, the limited human control over forceful acts by an

⁷ Arts 3(2), 5(2)(a)-(b) and 10(1) and Technical Annex, 1996 Amended Protocol II to the CCW on Prohibitions or Restrictions on the Use of Mines, Booby-Traps and Other Devices (CCW AmPII).

AWS render it impossible for it, unless specifically deployed in conflict, to independently spark an IAC. This remains true even if a specific state were *a priori* responsible for all of the AWS' acts during that conflict.

If a sentry-AWS is used in a border control role and fires upon members of a neighboring state's border force, this would not spark an IAC. Violent acts such as these are thus regulated by IHL standards on the use of armed force.

The view that AWS are unable to “accidentally trigger a war” agrees with the wider notion that, in support of the right to life, a peaceful resolution should be sought whenever the existence of an armed conflict is in doubt. Nevertheless, a state which has been attacked by another is justified in assuming that these violent acts were deliberately hostile. Although an AWS might not be able to spark an IAC on its own, its use has an inherent risk of escalation.

II.II. Autonomous Weapon Systems and Non-International Armed Conflict Threshold

a. Organization

Historically, there have been three key reasons for the organizational condition. The first was that it excludes private or individual action (Sivakumaran, 2012: 176). As seen in Additional Protocol II (APII) and Common Article 3, there must be parties to the conflict. In this context parties are groups of actors, required on either side of the conflict (ICRC, 2007: 719). Secondly, it recognizes the fact that violence can only reach an appropriate intensity for the application of IHL if that violence is sufficiently organized (Watkin, 2010: 680). Typically, this level of violence is only seen when resulting from the coordinated actions of a collective entity. As military technologies have advanced, limiting the number of humans required for widespread violent acts, the relevance of the violence-organization relationship has decreased. This shift may be strongly supported by the widespread use of AWS by armed groups. Thirdly, and most significantly, the organizational condition ensures that armed groups are IHL-compliant (Sivakumaran, 2012: 185). To be discussed further, this latter factor does more than support the stipulation; it also represents an important requirement that, in order to trigger a NIAC, armed groups must fulfil.

When characterizing a conflict, therefore, a level of organization is central to the idea of an organized armed group. It remains difficult, however, to determine the legal requirements for this criterion. To prove the existence of the appropriate organization, inter-governmental organizations, international tribunals and states often use indicia that, in the aggregate, prove that this threshold is met. Theories presented in the ICTY shed important light on factors that, considered as a collective, can confirm whether or not an armed group constitutes an organized armed group (Prosecutor v. Milošević, 2004: 36). Of particular note, the *Boškoski* judgment abridges a number of the judgments before it. This judgement outlines the key indicia, listing these as the group's ability to conduct organized operations, degree of discipline, level of logistics, and command structure, as well as its ability to speak with one voice and implement IHL (Prosecutor v Boškoski and Tarčulovski, 2008: 201). It is important to note that while these indicia might suggest an appropriate level of organization, they do not represent individual requirements. As such, while these factors are useful for the identification of a NIAC, their absence does not signify that the organizational requirement is unfulfilled. Considering the key question—whether an armed group's AWS use might imply legal consequences for establishing whether the organizational criterion is met—these indicia, used in the aggregate, might be of use.

Arguably, there are a number of other thresholds for the organization criterion, stipulated in the law. In particular, to be IHL-compliant, organized armed groups first need a system of control. APII and Common Article 3 both require that armed groups are able to comply with IHL. Specifically, APII states that organized armed groups must be able to apply the Protocol rules. Common Article 3 also implies the same, stating that “each Party to the conflict shall be bound to apply, as a minimum, the following provisions”, thus demonstrating that, in a conflict, the same rights and obligations apply to both parties (Sivakumaran, 2006: 369). The general consensus is that while organized armed groups require the ability to comply with IHL, thus fulfilling the criterion, they are not required to then exercise this ability (Schmitt, 2012: 129).

To satisfy the condition that armed groups must have, at least, the ability to fulfil their legal obligations, such groups will require a command structure that controls its members (Prosecutor v Bošković and Tarčulovski, 2008: 196). As such, APII indicates the requirement for “responsible command”, highlighting that armed groups need a structure to support their IHL-compliance (Dinstein, 2016: 49).

Despite there being no command structure stipulated in Common Article 3, many commentators propose that without “responsible command”, groups would be unable to apply the Article (Moir, 2009: 43). Furthermore, as armed groups are required to apply the law, they are to be considered as having the sufficient structural ability to do so. As such, the level of organization required by an armed group is determined by its need for a command structure and for IHL-compliance (Bothe, Partsch, & Solf, 2013: 695).

While the nature and degree of necessary control are unclear, the quoted indicia, presented by the ICTY, show a level of organization that exceeds the threshold for Common Article 3 application. Specifically, court assessments have been largely based upon a state-like notion of organization, assuming a significant degree of organization within armed groups (Prosecutor v. Limaj, 2005: 104). It is not necessary, however, for an organized armed group to reflect the structure of a state’s armed forces, even in the application of APII, which stipulates a more mature organization than Common Article 3 (Sandoz, Swinarski, & Zimmermann, 1987: 4463).

Considering the indicia outlined and the general thresholds for command structure and ability to comply with IHL, there are several clear features that might arise when armed groups make significant use of AWS: a possible lack of control over AWS functions; the potential for a much smaller group; and the likely simplification of group structures. This section will consider whether or not these features might affect the requirement for organization, thus shaping the nature of a conflict.

Firstly, there are many ways in which AWS use might simplify the structure of an armed group. For example, using an AWS in an intelligence, surveillance, and reconnaissance (ISR) capacity, group coordination could be improved. The emergence of remotely piloted air systems (RPAS) has greatly supported such activities. Indeed, the U.S. Defense Advanced Research Projects Agency (DARPA) has a Collaborative Operations in Denied Environment project that is working to introduce new software to existing platforms, enabling their autonomous collaboration, assessment of their own surveillance zones and nearby areas and, then, communication of this information, and recommendations, to a human supervisor. DARPA does not limit its consideration of these systems to functions of ISR; it does predict that they will have targeting abilities. With such collaborative autonomy, RPAS would be able to identify and strike targets with limited human involvement. If armed groups had platforms that contained miniaturized technology and an autonomous collaboration capacity, the level of necessary human coordination could be greatly reduced. For example, it is possible that swarms of miniature drones could coordinate their activity with one another. This collaboration would enable system control to be centralized and reduce the associated manpower requirement. Their coordination might be reduced to initial set-up and later re-programming (Lede, 2019).

Coordination would also redefine logistics. AWS would not have the same requirements as human agents in terms of basic sustenance; they would not require remuneration, accommodation, food, or water. Further, with fewer humans required for greater levels of violence, the needs of this group would also reduce. Mobile AWS would be able to quickly travel to a base for resupply, or self-destruct, limiting the requirement for supply convoys and security teams. Although there would still be some logistical requirements, these would be much simpler.

In order to control a population or physical area, an armed group must have some level of organization. The use of AWS could reduce the manpower and infrastructure requirements that are typically associated with the control of a population or area. In the case of modern military organizations, the South Korean SGR-1 sentry robot, currently deployed along the North Korean border, shows how modern robot technology might be used for target identification and eradication. With such systems difficult to obtain, it is more likely that armed groups would engage large swarms of affordable systems to create a no-go zone. Much like mines, these systems could be positioned to prevent movement and create fear.

Using AWS to perform traditionally-human functions—whether zone control, logistical movements, ISR coordination or any other—armed forces may simplify their requisite command structures. At the tactical level, AWS might replace a large number of personnel. For instance, they might replace the traditional team that would be used to impose a roadblock. With fewer human elements required to achieve an objective, AWS might also reduce the infrastructure requirements associated with the recruitment and motivation of these agents. By removing individuals, or even full hierarchical levels, such changes could greatly simplify the command structure of an armed group. Should an armed force have a less complex organization, it will not need such an elaborate command structure, nor such specific roles.

While this simplification is likely to impact the interpretation of the listed NIAC indicia, it is unlikely that this shift will alter the organization condition. An armed group's ability to comply with IHL would not be routinely affected by a less complex command structure, nor the scaled-down infrastructure needed for coordination and logistics in support of population and area control. Indeed, a simpler command structure might make IHL compliance more achievable. As such, were AWS augmentation to simplify organizational structures, it is possible that an organized armed group's classification would be unaffected by this shift.

Further, the second question of whether large-scale AWS use might affect the organizational condition of the *Tadić* test. If an armed group is structurally capable of IHL compliance and has sufficient organizational ability to conduct intense operations, how would the group be affected by its own shrinking? What if the smaller group then contained only five members? The size of a group does not necessarily dictate its ability to comply with IHL. Furthermore, as autonomous technologies develop further, it is possible that related violence might surpass the intensity threshold, even in conflicts where very few humans are engaged. Arguably, because the intensity condition is intended to regulate situations where domestic systems are insufficient, and this remains unchanged, IHL would still apply to any group size.

It could, however, be problematic to categorize such individuals as an organized armed group. This is particularly true as a fundamental requirement of the organizational condition is that a collective entity is engaged in the hostilities. Arguably, the drafters of the indicia would not have imagined a group of five individuals, when outlining this requirement for a collective entity. In order for a group of individuals to be considered a collective, their organization must have a sufficiently sophisticated structure. Were this not the case, the organizational condition would be greatly undermined, with all focus then placed on the intensity condition. Moreover, some states might resist the downscaling of a structured armed faction, fearing that this would appear to legitimize armed rebels.

The third question considers the potential consequences for the organizational condition, should an AWS perform key functions without adequate control by an organized group. If this were to happen, it might compromise the ability of the group structure to support IHL compliance. The primary concerns in this area relate to the functional responsibilities delegated to the AWS, including the selection, tracking, and eradication of targets. According to the specific technology and coding, the extended deployment of AWS in complex, dynamic arenas might hinder an entire group from ensuring its compliance with the IHL principles of precaution, distinction, and proportionality (Wagner, 2014: 1380). While the initial decision to deploy an AWS would be made by its commander and operator, as well as the initial IHL-compliant target analysis, once that system were deployed, any changes in the operational environment would affect this original analysis. Unable to then modify the AWS accordingly, the group might find that it loses its structural ability to ensure IHL compliance, should the situation be inescapable. In the event that an AWS is deployed and, while it has no ability to process or adapt to operational changes, its commander or operator also has little or no control over it, its IHL compliance might be affected (Bruun, Goussac, & Boulanin, 2021). It is important to note, however, that only extensive use of such systems would result in changes to the group's structural capabilities. In any other case, their use might violate IHL, but would not necessarily indicate that the group were unable to comply with the law.

b. Intensity

As well as the organizational condition, the *Tadić* test also seeks to determine whether hostilities constitute a NIAC. The test requires this assessment to differentiate between situations where domestic law enforcement should suffice and systematic failures that require military intervention and the application of IHL. In contrast with the organizational condition, this second criterion considers the entire conflict. As such, it calculates the combined violence of all parties rather than just the acts of one organized armed group (Prosecutor v Boškoski & Tarčulovski, 2008: 185).

What is unclear, however, is the precise intensity threshold that must be surpassed within hostilities (Prosecutor v. Lubanga, 2007: 234). Much like the organizational condition, rather than specifying an intensity, the approach to this condition typically seeks an indication that the threshold has been met. Once again, the ICTY's *Boškoski* judgment proves useful, abridging some of the factors identified. These consider the seriousness of an attack, the geographic and temporal spread of territorial conflicts, the quantity of troops, the number of fleeing civilians, weapon types, the extent of damage, the besieging of towns, and the number of casualties, as well as the occupation of territory, front lines between the parties, road closures, deployment of government forces, government use of force, cease-fire orders and agreements (Prosecutor v. Haradinaj, 2008: 49). Importantly, these are all factors for consideration, not requirements.

As previously discussed, the advancement of AWS technology is likely to support the performance of greater violent acts by smaller groups of people. Although this could change the requisite organization of such a group, when seeking to conduct violent acts on a sufficient scale, it is unlikely to affect the legal requirement for that violence to reach a specific intensity level. Nevertheless, the use of AWS would enable armed groups to reach the intensity threshold more easily.

One way in which AWS might influence the intensity condition or the indicia for it is the way in which they balance the value of human life with that of property. Armed engagement, material damage, and the number of casualties (combatants and non-combatants) all indicate intensity (Prosecutor v Boškoski & Tarčulovski, 2008: 177). As humans are replaced by technology, the nature of armed engagement may change, increasing destruction and potentially decreasing human casualties. This would be true if an AWS were to engage another AWS or object. It is possible that such cases would affect the ratio of human casualties to material damage, significantly reducing the loss of human life. It is likely that this would only be the case in very specific circumstances, where the AWS replacement of humans would not have increased collateral damage figures.

When evaluating the intensity condition, courts have considered the amalgamation of indicia, with each afforded the same level of importance. It is questionable, however, whether the destruction of AWS, as property, in place of deaths, should be afforded the same weight as human casualties. Otherwise, explained, when assessing the intensity condition, is a human death or casualty to be considered a graver consequence than material destruction? Rather than considering the autonomy of the systems, this question focuses on the replacement of a human with a machine.

Certainly, human life is considered more valuable (Ülgen, 2020: 19). Legally, IHL attributes the highest value to human life. The core purpose of the law is to limit suffering insofar as possible, while also acknowledging that armed conflict is a fact of life (Rosert, 2019: 373). Furthermore, armed groups are most likely to have cheap, easily-replaceable AWS. Indeed, there is potential that a 3D printer might generate disposable drones that could be used in swarms. With human life considered to be more valuable, the AWS replacement of humans makes it possible to decrease the intensity of conflict, causing more material damage and fewer human casualties. Essentially, this could reduce the chance of an armed conflict meeting the requisite threshold. Alternatively, if material destruction were to be valued in the same way as human life, this could mean that intense battles between AWS would meet the intensity threshold, sparking a NIAC (provided the conflict also met the organizational condition). Consequently, violent clashes between potentially replaceable objects might stimulate a legal environment that permits the prosecution of individuals, on account of group memberships.

CONCLUSION

Since there are no nearby humans involved, an autonomous weapon system cannot start a war independently and, consequently, violate international humanitarian law or rules related to international armed conflict. The state's *animus belligerendi* (intention to fight) cannot be assumed if human state agents have not explicitly declared their desire to go to war with another state. In times of peace, a sentry-AWS cannot unintentionally start an IAC when it is being used to guard a border. As such, the use of force in its applications is still governed by international human rights law.

Armed organizations' extensive use of AWS may consequently have legal repercussions for whether the criterion for a non-international armed conflict (NIAC) is met. The organization criterion offers the most opportunity for this shift. Armed groups' use of AWS may or may not make them eligible to be classified as organized armed groups. The mechanisms that underpin the use of the AWS, specifically in situations in which there is a pervasive absence of control over AWS or a considerable decrease in the size of the group, could ultimately influence whether a NIAC is activated. In contrast, using AWS could lead to simplification of the organizational structure of a group. This would not, in and of itself, have a direct bearing on the threshold for an armed conflict. AWS use is less likely to have an effect on the intensity prong of the *Tadic* test than on the organization criterion. That said, the possibility of AWS replacing humans does prompt concerns regarding the value of human life in comparison to objects.

More fundamentally, the prevalent utilization of AWS by insurgent groups may force a reevaluation of the justifications that historically have served as the cornerstone concerning the criteria for structured armed factions. It is questionable if these justifications—the criterion's emphasis on collective action, the notion that a specific degree of structure is required to carry out acts of force that are serious enough to call for IHL, and the critical responsibility that offering organizations the structural means to adhere to IHL has in the criterion—continue to be the primary motivators behind the requirement.

Pervasive AWS use may also cast doubt on the connection between the two prongs of the *Tadic* test since it allows groups to commit acts of violence that are more severe. This gives more weight to the intensity prong of the test. In particular, the possibility that a group of five individuals—possessing both the structural capacity to adhere to IHL and the ability, through the use of AWS, to carry out violence that meets the intensity criterion when combined with the hostilities of their opponents—could satisfy the criteria for being an organized armed group, raises questions about the connection between the organization and intensity requirements. The organizational requirement might become a *de minimis* hurdle to be overcome on the route to looking at the intensity criterion if it is determined that the collective aspect is not of sufficient significance and that the infrastructure does not involve a level of human complexity. In this approach, using AWS might provide the already complicated discussion of when a NIAC is—and should be—triggered by another layer of complexity.

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