**The Main Legal And Ethical Challenges Posed By**

**Autonomous Weapon Systems (AWS)**

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***ABSTRACT***

*Current technological developments are paving the way to new and unknown circumstances in which artificial intelligence will carry out functions until now performed by human beings. These evolutions are affecting almost every aspect of our daily lives and that also includes the military domain. The ongoing trend of ‘dehumanization’ of warfare, intended as a shift in the degree of involvement of real people in the decision-making process leading to the adoption of critical decisions such as life and death, poses vital questions from a legal as well as an ethical perspective.*

*The aim of this paper is therefore that of highlighting the main challenges posed by the potential deployment of Lethal Autonomous Weapon Systems while attempting to further draw the attention of the public opinion on the topic and possibly suggest solutions to the actual deadlock.*

***Keywords:*** *EU, USA, UN, accountability, autonomous weapon systems, ethics, legal aspects of AI.*

INTRODUCTION

Warfare has always been among the most sensitive areas to technological improvements. Countries all over the world are constantly willing to gain strategic advantages over the others as “a core characteristics of warfare was, always had been and is the continuous development of new methods and means of warfare to overwhelm potential enemies with new, unexpected abilities of the military or to keep at least the potential threat level against attacks at is highest possible level”.[[2]](#footnote-2)

Over the last few decades technological disruptions have given strong impetus to the debate dealing with the applicability of AI to many different domains that are already now, and will certainly even more in the future, affect nearly every aspect of our lives. Legal as well as ethical concerns are the main pillars of this discussion, and the military field is not exempt from it.[[3]](#footnote-3) The not too abstract possibility of having in a near future the so-called Lethal Autonomous Weapons Systems – also called Autonomous Weapons Systems or even Killer Robots – as the main actors in the battlefield played a pivotal role in bringing to the fore the debate over the potentially legal as well as moral controversial consequences of such deployment. Crucial from this perspective in helping the debate gain momentum has been the increased awareness fostered by multiple NGOs like Human Rights Watch that forced governments to include such argument in their agendas.[[4]](#footnote-4)

If from a legal perspective the development of new weapons is not a unique phenomenon, as the existence of broad and abstract norms devised to regulate the emergence of new means of warfare clearly reflect[[5]](#footnote-5) – however inadequate to regulate new challenges they might be – the ethical questions stemming from such advancements are daunting and ask for clear answers. There are at least two points that seem to be particularly problematic: first, is the decision over human life and death something that we can delegate to machines? Second, are AI systems able to act in an ethical/moral manner or it is just a human value/virtue? In other words, would they be able “to replicate the human decision-making process?”[[6]](#footnote-6)

Whether this new kind of weapon should be regulated or banned is the other pillar of the ongoing debate that has developed. While advocates of the ban mainly argue over the concept of human dignity, meaning that no human being should be deprived of its life by the decision of a machine,[[7]](#footnote-7) on the other hand supporters of the deployment of these new weapons ground their arguments on the many benefits that, in their opinion, stems from the application of Autonomous Weapon Systems. Benefits that clearly outweigh the “costs”.

**LETHAL AUTONOUMUS WEAPON SYSTEMS AND THE MAIN LEGAL AND ETHICAL CHALLENGES**

Before entering into any discussion about Autonomous Weapons System (AWS) what is important to do is to frame the issue at hand. To comprehensively understand AWS, it is therefore essential to first define them. Contrary to what one might think, the most important element to consider when defining this new kind of weapon system is not the technology applied. Rather, the definition mostly relies on the role of human operators when it comes to the selection and engagement of targets. In this light is it therefore possible to identify 3 main categories of weapons systems:

* Human-in-the-loop, also known as semi-autonomous systems which are not capable of self-selecting and self-engaging targets. These systems deeply rely on the role of human operators.
* Human-on-the-loop or human-supervised autonomous systems that unlike the previous ones are instead able to select and attack targets even though the human operator is oversighting the activities of the machine with the possibility to override the decisions taken by the machine itself.
* Human—out-of-the-loop or fully Autonomous Weapons systems for which a unique definition is still missing today although they can be broadly defined as systems capable of searching for targets and engaging them without any human supervision.

For the purpose of this paper, we will mostly deal with the last-mentioned category of autonomous weapons systems.

According to a 2023’s document devised by the US Department of Defense AWS are “weapon system[s] that, once activated, can select and engage targets without further intervention by a human operator”[[8]](#footnote-8) while the International Committee of the Red Cross defines them as systems able to “independently select and attack targets, i.e., with autonomy in the 'critical functions' of acquiring, tracking, selecting and attacking targets”.[[9]](#footnote-9)

The enhanced capability of these autonomous weapons able to perform decision-making processes that have usually been performed by human beings is the most problematic question from both an ethical and legal perspective around which the whole debate has been revolving. If on the one hand the lack of human feelings such as fear, anger, revenge, frustration and so on seem to be a clear advantage, on the other it is exactly the lack of human qualities and feelings, such as empathy and compassion, that opponents to AWS point to in their argument to prevent the deployment of such weapons.

Although “the concept of AWS is not per se unlawful”[[10]](#footnote-10), from the legal side there are many challenges posed by the development of these weapons which are mostly related to practical questions such as how and to what extent are these new systems able to conform to the existing principle regulating war. Military necessity, proportionality, distinction, and humanity are just some of the main principles traditionally governing the Law of Armed Conflict, also known as International Humanitarian Law (IHL). Until now indeed the practical implementation of all of these principles into the battlefield has relied upon the judgment of human operators that through a context-based evaluation have decided whether a certain action was to be taken or not.[[11]](#footnote-11) As explained by the UN special rapporteur on extrajudicial killings in its 2013’s report “while robots are especially effective at dealing with quantitative issues, they have limited abilities to make the qualitative assessments that are often called for when dealing with human life”.[[12]](#footnote-12)

According to the military necessity, military force should be used when ‘strictly necessary’. For instance, in the case of armed conflicts, to gain an advantage over the enemy, the adoption of certain measures is authorized as long as these actions do not provoke unnecessary suffering. The same goes when dealing with the principles of distinction whose grounds can be retrieved from article 51 of Additional Protocol I of the Geneva Conventions, according to which “the civilian population as such, as well as individual civilians, shall not be the object of attack” meaning that the targets of military attacks can only be military objectives while civilians must always be avoided and protected. As it regards to the proportionality of military attacks, in this case as well, the role of the human operators is fundamental as it is prohibited to unleash a strike expected to create “incidental loss of civilian life, injury to civilians, damage to civilian objects, or combination thereof, which would be excessive in relation to the concrete and direct military advantage anticipated”.[[13]](#footnote-13)

The substitution of human operators with weapon systems allegedly capable of performing crucial decisions, including distinguishing between civilians and combatants or calculating and understanding the benefits and costs of specific military actions in particular environments, seems to pose a major legal threat either from a practical point of view – as it is not yet clear if such a highly intelligent system will never exists – and from a regulatory perspective – with the adequacy of existing rules designed to regulate human behavior that are questioned.

Subsequently this threat brings along with it another extraordinarily controversial legal issue, somehow inherently bound to the application of AI in almost every domain, which is the accountability question for the violation of existing norms. Suppose that in the future AWS would exist and be deployed in the battlefield, who should be held accountable in the not too unreal case of a violation of one of the above-mentioned principles governing the war? Even though it is yet unclear who should bear the burden for such a crime in the case it might happen, according to the literature, three seem to be the potentially liable actors within this context:

* The state, which would be held accountable for the misuse of weapons by its own armed forces.
* The commanding-officer who supervises the deployment of the AWS.
* The developer of AWS.

Despite what at first sight might appear to be a clear picture is instead a very blurry one. What is still missing is an agreement over the appropriate liability framework, as many are the difficulties that need to be considered when dealing with each of the above-mentioned entities, so much so that experts are mostly concerned about the possibility of facing what has been defined as “a responsibility gap”.[[14]](#footnote-14)

As a result of this ‘dehumanization’ of warfare, embodied by the diminished role of human being in the crucial decisions and actions of searching and engaging targets in the battlefield, brings along with its multiple implications from a moral perspective as well. What seems to be particularly controversial on this side is the possibility of machines taking over human life, an action that is considered to be disrespectful of the intrinsic dignity of every human being. The main reason for that is “that the person targeted by AWS is reduced to being an object that has to be destroyed, where there is no possibility of appealing to the humanity of the enemy”.[[15]](#footnote-15) However a better and deeper explanation is worth to be made.

According to Article 6 of the International Covenant on Civil and Political Rights (ICCPR) “Every human being has the inherent right to life. This right shall be protected by law”.[[16]](#footnote-16) Being the right to life a supreme right, since on it depends on all the others, it is easily understandable why being deprived of such a meaningful right by a machine that cannot understand the significance of human life and therefore cannot respect its value is considered to be disrespectful of the inherent dignity of every human being.

Advocates for a ban of AWS find in this reason the crux of their argument as many seems to be the obstacles on the way to the creation of an unmanned system capable of carrying out decision-making processes that do not rely just upon quantitative but also on a more complex situational evaluation that requires proper human qualities.[[17]](#footnote-17)

When dealing with the legal challenges posed by the likely future deployment of AWS, we have already outlined how compliance with existing norms is one of the main difficulties that stems from the development of these systems. These difficulties are due not just to the fact that the rules concerned have been devised well before the development of such systems started, but it is also due to the fact that AI, not matter how powerful it is, will probably always lack the so-called ‘situational awareness’ to discern a real threat and deescalate potentially dangerous situation in which the employment of human operators would presumably avoid irreversible mistakes leading to different choices. Indeed, when it comes to the application of the various principles that lay at the heart of the IHL to real life this is not just a matter of calculations based on the available data. There are an infinite range of situations that no system developer can think of covering and most of the time the application of such principles requires a deeper “understanding of human nature”.[[18]](#footnote-18) Bearing this in mind three are the major moral objections:

1. It is almost impossible, at least not in the near future, that we will have robots carrying out the distinctions required by the IHL during armed conflicts.
2. From a value-based approach, it is considered to be inherently and deeply wrong to let robots determine human’s life and death decisions.
3. In the case of an accident caused by an AWS who is to be held accountable?

The debate over the morality of AWS is then further fueled by the likely consequences that would arise from their adoption. If we think about a war, it will probably become easier to wage it given the reduced risks both in terms of soldiers’ lives and political consequences. Political consequences which would potentially result in a direct threat to the global security and peace.[[19]](#footnote-19)

Moreover, the deployment of AWS would not be limited to an armed conflict. It is indeed obvious that “once available, this technology could be adapted to a range of other contexts that can be grouped under the heading of law enforcement”.[[20]](#footnote-20) Over the last few years we have already witnessed how thin is the border between democracies and autocracies, justice, and revenge and from this point of view the deployment of AWS could be another crucially problematic factor to be taken into account.

One of the possible answers to these objections could be the employment of a ‘mitigating’ concept such as that of ‘meaningful human control’.

MEANINGFUL HUMAN CONTROL (HUMAN IN OR OUT OF THE LOOP?) AND THE QUESTION FOR BANNING OR REGULATING AWS

Since 2013, when the debate around AWS started to spread out with the establishment at hands of several non-governmental organizations of the campaign to stop killer robots[[21]](#footnote-21), the question over banning or regulating Autonomous Weapons gained momentum forcing national governments to start thinking about the best approach toward these new technologies. At the diplomatic level discussions started in 2014 within the framework of the United Nations and specifically within the Convention on Certain Conventional Weapons (CCW) whose objective is to limit the use of weapons deemed to provoke “unnecessary or unjustifiable suffering to combatants or to affect civilians indiscriminately”.[[22]](#footnote-22) The importance of the question was consequently formalized through the creation of a Group of Governmental Experts (GGE) whose work was eventually resumed in the 11 guiding principles on LAWS.[[23]](#footnote-23)

Notwithstanding the efforts made we are still today a long way from having a proper regulation of these systems and this do not depend just on the ethical and legal challenges already mentioned but it is particularly due to the strategic concerns over the impact of such new weapon since “perceived military value is exceptionally high, and the current geopolitical landscape is not conducive to new arms control breakthroughs”. The question is then further exacerbated by the underlying difficulty of conceptualizing LAWS. It is, indeed, not yet clear how much autonomy it is required in order to classify a weapon as LAWS as it also shows the attempts, made during the early stages of the debate, to exclude defense systems from the autonomy discussion by claiming that, unlike autonomous weapons, they have not too much room for maneuver since they “are designed to merely repeat a few pre-programmed actions in case of incoming munitions”.[[24]](#footnote-24)

One of the majors’ concerns, as it was previously outlined, with the deployment of AWS is represented by the lack of human control over the crucial decisions and actions it might undertake. Either from a legal and ethical perspective the transfer of the decision-making process from humans to machine is the main argument driving the call for a preemptive ban over this new kind of weapon. Specifically, what seems to be problematic is the implicit requirement of human qualities – from a legal perspective – and feelings – from an ethical one – that lay at the roots of IHL.

This lack is also the main hurdle in the rift between pro-ban and pro-regulation[[25]](#footnote-25) which is still today quite polarized. Even though the debate is a fierce one with most of the involved actors entrenched in their opinions some common grounds on especially important questions can still be found, such as the existing need, for both sides, to eliminate the human error from the battlefield. [[26]](#footnote-26) Despite this common ground however, the tough question over which agreement has not yet been reached.

«If the control of acts and decisions, which have been met originally by humans, are increasingly delegated or transferred to unmanned systems or programs […] the most relevant criterion for a legal distinction becomes human control».

A concept that might be useful from this perspective and which has been developing over the last few years to try to find a compromise, acting as a sort of mitigating factor, between supporters and opponents of AWS is that of “meaningful human control”.[[27]](#footnote-27) This principle, that has been devised in 2015 by the NGO Article 36 is meant to reiterate that “humans not computers and their algorithms should ultimately remain in control of, and thus [be] morally responsible for relevant decisions about (lethal) military operations”.

Indeed, if everyone’s agree that the lessened role of human operators over the vital decisions of searching, assessing and whether attacking or not can be identified as the most challenging issue from either a legal or moral perspective, retaining adequate human control might work as a keystone to overcome existing obstacles to the acceptance of AWS as legitimate weapons.

Holding humans accountable by keeping them as decision-makers is nevertheless not a controversy-free task. The first problem that must be considered relates to the kind of technologies applied. AI is more and more moving from algorithms to deep learning solutions whose understanding is far beyond “the reach of a human brain”.[[28]](#footnote-28) As a result this bring along with it other 2 questions:

1. How can humans intervene in the decision-making process if we are not able to understand what are the factors which have determined such a decision? In a few words, the problem here is transparency.
2. The second question is a more practical, even though still an important one. If we allow humans to stay on the loop, what is the advantage of having these systems at all? AWS as all AI technologies are able to process big amount of data and therefore reach a decision in less than a few seconds giving a military advantage, how can we expect to have humans scrutinize these complex decisions – that we are not able to understand – in the same amount of time in order to preserve this advantage? It is practically impossible.

Therefore, even if from a regulative point of view this concept might be used to eventually find a common ground upon which a regulatory framework might be designed this is yet to be achieved. Moreover, the concept of meaningful human control is still in its embryonic phase as it shows the fact that the different actors involved understand it in different ways. Which phases should be considered when assessing the level of human control? is the design phase more or less important than the development and deployment ones? Not all the states at the international level agree on which kind of human control should be essential in determining the level of control over AWS.

A major cause for this confusion can be attributed to another key feature of the debate which is its future-orientation. These characteristics together with the strategic relevance of these systems, contribute in a fundamental way in making it difficult, to the actors involved, to formulate appropriate constraints to which then stick and commit.

CONCLUSION

Even though it is not yet clear whether AWS has been already fully developed glimpses of what we might face in the future have been already provided over the last few years. The 2020 Nagorno-Karabakh war that was labelled by many experts as the first automated war and current developments in the Russian war of aggression toward Ukraine are just two examples. These enhanced capabilities of new technologies to perform tasks until now reserved to human operators have contributed to bring to the fore both legal and ethical concerns over their deployment.

On the one hand the development of such systems seems to be a major threat, not just from a legal and ethical perspective but also from a global security one. On the other hand, there is a profound disagreement between the main actors involved, that tend to perceive it in radically different ways.

Disagreements apart, however, the recent rise of the concept of “meaningful human control” was like a ray of sunshine in the darkness of the debate. Indeed, the concept was conceived as a potentially mitigating factor between the different perspectives, since most of the actors seem to agree on the desirability of having, for different reasons, humans rather than robots involved in some phases of the whole process. Despite the initial optimism, the stalemate about what must be done is still here though. The fact is that the US has rejected the call for regulating or banning killer robots calling instead for a “non-binding code of conduct”[[29]](#footnote-29) came as a smoking gun of that.

Given the strategic importance of these systems indeed and the lack of clarity surrounding the debate, formulating appropriate responses to the issue is challenging. Therefore, what we are still missing today is probably the starting point for the regulation of AWS, which consists of a clear and unique definition that wouldn’t leave any grey zone.

Another challenge comes from the perspective used to frame the issue, that in turn affects the response. Changing the lens from the military to the humanitarian one would be a good step to overcome the stalemate. Keep reasoning in terms of military gains would in fact do nothing but feed the vicious circle in which we are trapped today. The moving force toward regulation should be the awareness of the disruptive effect that such systems might be able to produce. Only this can drive us to the same outcome that 50 years ago the development of nuclear weapons led us to.

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