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# Embracing Artificial Intelligence

# by placing limitations

# on Autonomous Weapon Systems

by

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## KEY TERMS

Autonomous Weapons - Autonomous Weapons Systems – UN Convention on Conventional Weapons - International Humanitarian Law - Laws of War - Lethal Autonomous Weapon Systems – “Killer Robots” - Meaningful Human Control – The Martens Clause – Geneva Convention – Artificial Intelligence – Human Dignity.

Annexure G

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## SUMMARY

Among the first countries to adopt a formal policy on AWS was the USA. Despite the updated Autonomous Weapons Policy, the said policy remains misunderstood. Lethal autonomous weapons (LAWs) are an emerging field and establishing a common NATO standard will help reduce the gap in capabilities among NATO members. On the one hand, Autonomous Weapon Systems (AWS) do not engage in disputes and conflict, therefore reducing collateral damage. On the other hand, AWS lacks value judgment and thus leads to a violation of rights, increasing incidental casualties. The implementation of these standards can help nations ensure that capable autonomous weapons systems will be produced that can be deployed within ethical parameters. However, a deeper investigation should be conducted on the use of autonomous weapons systems until international humanitarian law (IHL) is properly adopted to address the concerns raised by such systems, and until such time that viable solutions are found, this author recommends placing limitations on AWS. Based on the lethal consequences of activated AWS, International limits should be formulated, established, and adopted to limit AWS. Therefore, I recommend the establishment of international limits and legally binding rules on AWS to warrant civilian protection, compliance with IHL and ethical acceptability.

The research would firstly focus on what would be classified as AWS. How autonomous weapons affect our rights and how to ensure the protection of such rights would be the second focus of the introduction. The types of Autonomous Weapons, including AWS, would be discussed in the second chapter of my mini-dissertation. The main inquiry as set out under the third chapter is thus concerned with the necessity for AWS to comply with the general principles of the law of armed conflict, whilst the existence of a governing treaty remains outstanding will be discussed. The inquiry is thus two-fold, focusing first on the Conflicting legal, moral, and ethical challenges, including concerns raised, which would follow as outlined under chapter 4, and secondly, Chapter five will caucus how to breach the concerns of soulless robots and the inevitable capabilities of AWS. Lastly, concluding remarks under chapter 6.

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## LIST OF ACRONYMS & ABBREVIATIONS

| | |
|---|---|
| AI | Artificial Intelligence |
| AWS | Autonomous Weapon Systems |
| Brook. J. Int'l L. | Brooklyn Journal of International Law |
| Case W. Res. J. Int'l L. | Case Western Reserve Journal of International Law |
| CCCW | Convention on Certain Conventional Weapons |
| Constitution | Constitution of the Republic of South Africa, 1996 |
| Delphi – Interd. Rev. of Emerging Tech | Delphi - Interdisciplinary Review of Emerging Technologies |
| FLFWA | Fletcher Forum of World Affairs |
| Georget. J. Int. Law | Georgetown Journal of International Law |
| GGE | Group of Governmental Experts |
| ICCPR | International Covenant on Civil and Political Rights |
| ICL | International Criminal Law |
| ICRC | International Committee of the Red Cross |
| IHL | International Humanitarian Law |
| IHRL | International Human Rights Law |
| Int. Rev. Red Cross | International Review of the Red Cross |
| ICCPR | International Covenant on Civil and Political Rights, 1966 |
| J. Int. Humanit. Leg. Stud. | Journal of International Humanitarian Legal Studies |
| J. of Rob. Artif. Intell. Law | Journal of Robotics, Artificial Intelligence & Law |
| JNSLP | Journal of National Security Law and Policy |
| KRC | Killer Robots Campaign |
| LAWs | Lethal Autonomous Weapons |
| MHC | Meaningful Human Control |
| MLR | Military Law Review |
| NATO | North Atlantic Treaty Organisation |

| | |
|---|---|
| Protocol I | Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), 1977 |
| S. C. Law Rev. | South Carolina Law Review |
| SAJHR | South African Journal on Human Rights |
| Southwest. J. Int. Law | Southwestern Journal of International Law |
| SSBNs | Submersible Ballistic Missile Nuclear-powered Submarine |
| TCLR | Trinity College Law Review |
| Temp. Int'l & Comp. L.J. | Temple International & Comparative Law Journal |
| TTP | Tactics, Techniques, and Procedures |
| U. Pa. L. Rev. | University of Pennsylvania Law Review |
| UDHR | Universal Declaration of Human Rights, 1948 |
| UN Charter | Charter of the United Nations and Statute of the International Court of Justice, 1945 |
| UN | United Nations |
| UNODA | United Nations Office for Disarmament Affairs |

# Chapter 1

## 1 Embracing artificial intelligence by placing limitations on autonomous weapon systems

### 1.1 Introduction

In the age of technological advances, opportunities were created whereby human interaction became redundant.[1] Despite a decade's discussions, an internationally agreed-upon definition for autonomous weapon systems (AWS) and lethal autonomous weapons (LAWs) remains outstanding.[2] However, in 2017, the United States (US) distinguished between AWS and Semi-AWS in the Department of Defence's Directive directed at the Autonomy of Autonomous Weapons.[3] To integrate AI and AWS, a unified effort must be made to standardise LAWs.[4]

AWS vehemently applies force on selected targets without the need for human intervention.[5] The danger underlies the disturbing fact whereby the human user of such an AWS does not participate in the selection process, nor is informed of the whereabouts or implementation of such force.[6] The once powerful human user is now merely present in the unnoticeable initial activation.[7]

1 Luzum & Nelson "NATO must embrace AI and autonomous weapons" (2022) https://cepa.org/nato-must-embrace-ai-and-autonomous-weapons/ (accessed 30 July 2022).
2 Allen "'DOD is updating its decade-old autonomous weapons policy, but confusion remains widespread" (2022) https://www.csis.org/analysis/dod-updating-its-decade-old-autonomous-weapons-policy-confusion-remains-widespread (accessed 29 July 2022).
3 As above.
4 Luzum & Nelson (2022).
5 International Committee of the Red Cross (ICRC) "ICRC position on autonomous weapon systems" (2022) https://www.icrc.org/en/document/icrc-position-autonomous-weapon-systems (accessed 30 July 2022).
6 As above.
7 As above.

LAWs are identified by lethality, autonomy, the impossibility of termination, indiscriminate effect,[8] and evolution.[9] Autonomy implies the absence of human intervention and human control during the entire process of executing a task.[10] The impossibility of termination concerns that once the device is launched and activated, the device has to fulfil its function and as a result, it is not possible to terminate the device once activated.[11] Indiscriminate effect ensures that AWS will execute its task regardless of conditions.[12] Evolution is depicted whereby AWS has the capabilities to learn autonomously through algorithms and interaction with its environment, exceeding human capabilities.

## 1.2 The rationale of the study

Concerns were raised about AWS, including that by the International Committee of the Red Cross (ICRC).[13] The concerns are impeccably high, literally life or death. The study is constructed on four motivations around the pressing issue of the catastrophic and existential risk surrounding AWS, in that:

### 1.2.1 Several classes of LAWs;

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8 Shea "The legal and ethical challenges posed by lethal autonomous weapons" (2021) *TCLR* 125. Art 51(4) of Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), 1977 (hereinafter Protocol I) provides that: "Indiscriminate attacks are prohibited. Indiscriminate attacks are: (a) those which are not directed at a specific military objective; (b) those which employ a method or means of combat which cannot be directed at a specific military objective; or (c) those which employ a method or means of combat the effects of which cannot be limited as required by this Protocol; and consequently, in each such case, are of a nature to strike military objectives and civilians or civilian objects without distinction".

9 Kania "China's strategic ambiguity and shifting approach to lethal autonomous weapons systems" (2018) https://www.lawfareblog.com/chinas-strategic-ambiguity-and-shifting-approach-lethal-autonomous-weapons-systems?fbclid=IwAR0L9L8r_pJggpP_1RwSJz3kL6OSBv6jYlzM82fbt9liaco4LxlaXKVa3Qs (accessed 29 July 2022).

10 As above.

11 As above. Art 80 of Protocol I sets out measures for execution and compels that: "1. The High Contracting Parties and the Parties to the conflict shall without delay take all necessary measures for the execution of their obligations under the Conventions and this Protocol. 2. The High Contracting Parties and the Parties to the conflict shall give orders and instructions to ensure observance of the Conventions and this Protocol, and shall supervise their execution."

12 As above. See Shea (2021) *TCLR* 125. Art 2 of the Universal Declaration of Human Rights of 1948 (hereinafter UDHR) states that: "Everyone is entitled to all the rights and freedoms set forth in this Declaration, without distinction of any kind […]".

13 ICRC "ICRC position on autonomous weapon systems" (2022) https://www.icrc.org/en/document/icrc-position-autonomous-weapon-systems (accessed 30 July 2022).

1.2.2 There is an increase in safety concerns in correlation to AWS's evolving capabilities;

1.2.3 With the current increased global armed conflict crisis, AWS's expected costs exceed the need for substitution of AWS for humans in armed conflicts; and

1.2.4 Limits should be placed on AWS and new legally binding rules should be adopted and imposed.

### 1.3 Research problems

AWS triggers, literally and figuratively, risks as a consequence of shortcomings in limitations. The lapse of limitations placed on AWS raises grave challenges from humanitarian, ethical, and legal perspectives.[14]

1.3.1 Does AWS bring a risk of harm to those affected?

1.3.2 What are the obstacles to international and humanitarian law compliance?

1.3.3 To what extent does AWS raise fundamental ethical and moral disputes for humanity?

### 1.4 Literature review

Although there is no fixed agreed-upon definition of AWS, AWS may be defined as:

> "A weapon system that, once activated, can select, and engage targets without further intervention by a human operator. This includes human-supervised [AWS] that are designed to allow human operators to override operation of the weapon system, but can select and engage targets without further human input after activation".[15]

Human-supervised AWS is defined as

> "A weapon system that, once activated, is intended to only engage individual targets or specific target groups that have been selected by a human operator. This includes: Semi-[AWS] that employ autonomy for engagement-related functions including, but not limited to, acquiring, tracking, and identifying potential targets; cueing potential targets to human operators; prioritizing selected targets; timing of when to fire; or providing terminal guidance to home in on selected targets, provided that human control is retained over the decision to select individual targets and specific target groups for engagement. 'Fire and forget' or lock-on-after-launch homing munitions

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14 As above.

15 Department of Defense Directive Autonomy in Weapon Systems Policy (DoDD Directive 3000.09) available at chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://irp.fas.org/doddir/dod/d3000_09.pdf (accessed 30 July 2022).

> that rely on TTPs to maximize the probability that the only targets within the seeker's acquisition basket when the seeker activates are those individual targets or specific target groups that have been selected by a human operator."[16]

As automatic weapons systems progress to semi-autonomous weapons systems, fully autonomous weapons systems will inevitably follow.[17]

Considering the right to life as the supreme right, the first question should be how autonomous weapons affect that right.[18] The protection of dignified life is undermined by AWS.[19] On the one hand, AWS does not engage in disputes and conflict, therefore reducing collateral damage.[20] Furthermore, AWS lacks value judgment and thus leads to a violation of rights, increasing incidental casualties.[21] It is believed that AWS is making better distinctions than humans, saving more lives due to better targeting.[22]

A computer, one could argue, determines how force should be applied objectively rather than subjectively.[23] International limits should be formulated, established, and adopted on AWS. These limits should encompass policy standards and good practice guidance.[24]

Based on outcries since 2015, the ICRC recommended the establishment of international limits and legally binding rules on AWS to warrant civilian protection, compliance with international humanitarian law (IHL), and ethical acceptability.[25] The ICRC is encouraging and waiting for standpoints from all governments and industries, at all levels, to address such international limits as paramount in addressing humanitarian emergencies.[26]

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16 As above.
17 Shea (2021) *TCLR* 18.
18 Heyns "Autonomous weapons in armed conflict and the right to a dignified life: An African perspective" (2017) *SAJHR* 46.
19 As above. The foreword of the UDHR states that the "international community has a duty to uphold and defend these rights." Sec 7(2) of the Constitution of the Republic of South Africa, 1996 (hereinafter the Constitution) states that, the State "must respect, protect, promote and fulfil the rights in the Bill of Rights."
20 As above.
21 As above.
22 As above.
23 As above.
24 ICRC "ICRC position on autonomous weapon systems" (2022) https://www.icrc.org/en/document/icrc-position-autonomous-weapon-systems (accessed 30 July 2022).
25 As above.
26 As above.

## 1.5 Research methodology

The study is based on a legal comparative method approach, comparing different legal systems, by providing a systematic description of the current legal problem including its recent legal material, such as fundamental rights. The main focus is that of Anglo-American systems, i.e., the USA with that of South Africa since the legal stance in the USA might provide solutions to concerns raised. The study is primarily a literature-based study with primary sources such as books, legislation, and international instruments, and secondary sources that include journal articles, internet sources, and news. Unfortunately, due to the recentness of the topic, there is no case law on either a national or international level.

## 1.6 Delimitation of study

The study does not focus on the broad sense of the concept of artificial intelligence (AI), general trends thereof, lack of clarity, definitions, and concepts, nor on the product liability laws of AI in the general sense.

The study does not focus on the extent of national security, mass destruction, or the next frontier in warfare. The study neither explores drones, nor all types of weapons of mass destruction, chemical, biological, radiological, or nuclear weapons.

## 1.7 An overview of Chapters

### Chapter 2: Autonomous weapon systems

The types of autonomous weapons are discussed throughout this chapter and study, which includes unmanned aerial vehicles (UAVs), submersible ballistic missile nuclear-powered submarines (SSBNs), autonomous sentry self-aiming gun turret robot and long-range anti-ship missile (LRASM). The chapter focuses on how revolutions in AI weapons[27] with superior firing capabilities, no longer require a human's presence, whereas the AWS replaces the decision-making process,[28] such as the range, force, or target.

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27 Del Monte *War at the speed of light: directed-energy weapons and the future of twenty-first century warfare* (2021) 213.

28 Martin, Ho & Sherling "New York and New Jersey make an early effort to regulate artificial intelligence" (2020) *J. of Rob. Artif. Intell. Law* 6.

**Chapter 3: Treaties on AI**

The concerning necessity for AWS to comply with the general principles of the law of armed conflict, whilst the existence of a governing treaty remains outstanding is discussed. These principles include that of humaneness, which is derived from the foundational treaties namely, the Hague Convention of 1907, the Geneva Conventions of 1949, and the 1977 Additional Protocols to the Geneva Conventions.[29]

**Chapter 4: Legal, moral, and ethical challenges**

Chapter 4 highlights the legal, moral, and ethical challenges faced by AWS, where AWS may undermine the existing legal frameworks governing armed conflict.

**Chapter 5: What should be done?**

This chapter caucus how to breach the concerns of soulless robots and the inevitable capabilities of AWS. Focus is placed on mitigating factors. The study aims to discuss how to avoid fatal accidents. International negotiations and possible treaty amendments are directed to adopt an international agreement governing AWS.

**Chapter 6: Conclusions**

Among the first countries to adopt a formal policy on AWS was the USA.[30] Despite the updated Autonomous Weapons Policy, the said policy remains misunderstood.[31] LAWs are an emerging field, and establishing a common North Atlantic Treaty Organisation (NATO) standard will help reduce the gap in capabilities among NATO members.[32] The implementation of these standards can help nations ensure that capable autonomous weapons systems will be produced that can be deployed within ethical parameters.[33]

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29 See also Shea (2021) *TCLR* 120.

30 Allen "'DOD is updating its decade-old autonomous weapons policy, but confusion remains widespread" (2022) https://www.csis.org/analysis/dod-updating-its-decade-old-autonomous-weapons-policy-confusion-remains-widespread (accessed 29 July 2022).

31 As above.

32 Michelson "Why NATO needs lethal autonomous weapon standards" (2021) https://cepa.org/why-nato-needs-lethal-autonomous-weapon-standards/ (accessed 28 July 2022).

33 As above.

However, a deeper investigation should be conducted on the use of autonomous weapons systems until IHL is properly adopted to address the concerns raised by such systems, and until such time that viable solutions are found, this author recommends placing limitations on AWS.

Concluding remarks follow regarding my notions that we are no longer confined to science fiction when it comes to autonomous weapons.[34]

[34] As above.

# Chapter 2

## 2 Autonomous weapon systems

### 2.1 Introduction

Since the beginning of time, humanity has struggled to understand the concept of death caused by nature or inflicted by other people. We now have to deal with a new cause of, death by an algorithm.[35] Many of the presumptions ingrained in the ethical, legal, religious, and other moral[36] systems across the world are challenged by this encrypted cold-blooded obliteration.[37]

AWS is generally defined as one of autonomy in a weapons system, implying that a machine performs a specific task (or series of tasks) throughout the operation of the system as opposed to a human.[38] AWS autonomy is not equivalent to human autonomy, which is sometimes viewed as the foundation for people's capacity to behave as autonomous moral agents.[39] It should, however, be noted that there is no internationally agreed-upon definition for AWS.[40]

AWS are devices that, once set in motion, can choose and interlock targets without any human involvement.[41] An AWS completes the targeting cycle without human assistance, comprising the final actions of identifying and forcefully engaging the target.[42] Additionally, the right to life calls for accountability, but it is unclear who will be held accountable when robots are miscalculated.

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35 Bhala "Legal guidelines needed on deployment of killer robots" (2019) *Pretoria News*; Steyn "War machines to decide who lives and who dies" (2021) *Business Day*; Bhalla "Who will call the shots on lethal autonomous weapons?" (2020) *Business Day*; and Anon "AI lethal weapons work leads to boycott" (2018) *Daily News*.

36 Jenkins "Averting the moral free-for-all of autonomous weapons" (2017) *FLFWA* 120.

37 Heyns (2017) *SAJHR* 3.

38 Sauer "Stepping back from the brink: Why multilateral regulation of autonomy in weapons systems is difficult, yet imperative and feasible" (2020) *Int. Rev. Red Cross* 240.

39 Jenkins (2017) *FLFWA* 120; Heyns (2017) *SAJHR* 3.

40 Nakamitsu "Perspectives on lethal autonomous weapon systems" in *UNODA Occasional Papers No. 30* (presented at the first meeting of the Group of Governmental Experts (GGE) of the High Contracting Parties to the Convention on Certain Conventional Weapons, November 2017) 6.

41 Heyns (2017) *SAJHR* 1.

42 Sauer (2020) *Int. Rev. Red Cross* 240.

It is becoming clear that a useful tool for determining what level of autonomous targeting is permissible and objectionable is the consideration of whether there exists MHC over the application of force.[43]

The development and utilisation of AWS should be put on hold until a comprehensive, multidisciplinary solution to the problem of increased autonomy has been established.[44] Whether humans still have MHC over how force is used determines what level of machine autonomy is appropriate.[45] AWS is permissible when people are the true judgement call and can be held accountable when anything goes wrong but must be outlawed when there is no MHC over the AWS, or when the AWS has complete autonomy;[46] yet, there are no solid reasons why AWS with MHC should be prohibited since they do not infringe on the rights to life and dignity.[47]

Thus, the concept of weapon autonomy is not very revolutionary; however, subsequent advances in AI enable users to operate weapon autonomy on a substantially greater level.[48] The way we interact with computers will set the tone for concerns stemming from the profusely trivial to those that might determine if humankind is preserved[49] and *vice versa*, how computers interact with humans will determine if AWS is here to stay. However, machine autonomy and self-learning[50] possess the potential to improve the state of humanity.[51] Surrendering human control over weapons and turning the decision to employ force over to a machine is the source of weapon autonomy;[52] AWS should not be given complete autonomy.[53]

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43 Heyns (2017) *SAJHR* 1.

44 Art 43(1) of Protocol I states that, "[s]uch armed forces shall be subject to an internal disciplinary system which […] shall enforce compliance with the rules of international law applicable in armed conflict".

45 Heyns (2017) *SAJHR* 5; Davison "A legal perspective: Autonomous weapon systems under international humanitarian law" in *UNODA Occasional Papers No. 30* (2018) 14.

46 Heyns (2017) *SAJHR* 5.

47 Heyns (2017) *SAJHR* 6.

48 Sauer (2020) *Int. Rev. Red Cross* 241.

49 Heyns (2017) *SAJHR* 3.

50 Seixas-Nunes "Autonomous weapons systems and the procedural accountability gap" (2021) *Brook. J. Int'l L*. 429.

51 Nakamitsu (2017) 2.

52 Sauer (2020) *Int. Rev. Red Cross* 240.

53 Heyns (2017) *SAJHR* 1; Littenberg *et al* "U.S. Department of Commerce imposes immediate export controls on artificial intelligence software used to automatically detect and identify objects remotely" (2020) *J. of Rob. Artif. Intell. Law* 244.

AWS often has the benefit of protecting one's troops, which is a substantial benefit from the perspective of the right to life. AWS provide extra military benefits,[54] such as quicker judgment and the ability to keep one's "eyes" on the target and an "eye" to find someone either on escape or missing, improving accuracy and being able to inform any person in any language[55] they understand notices, measures, and intended actions.

If AI can further this, enormous benefits will develop since machines may prevent human errors[56] and crimes executed on the battlefield due to feelings like anxiety, tiredness, or retaliation,[57] with a combined result that throughout time, reduces the likelihood of an AWS striking the mistaken target and saving a large number of human lives.[58]

The most well-known use of this innovation, armed UAVs, enables its operators to snap their fingers across the world to launch a missile from a weapon station loitering over the target. In addition to being physically absent from the site of use of force, functioning as armed UAVs, the development of AWS will allow people to ever be psychologically airheaded,[59] by not hastily deciding to direct and start a barrage *ad hoc*.[60]

An example of an existing AWS is the Israeli loitering munition Harpy which identifies and engages targets without human control or oversight.[61] Harpy is considered an AWS, in that it completes the targeting cycle without human assistance.[62] Examples of AWS firing without human intervention are Phalanx and Patriot.[63] The subsequent

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54 Art 52(2) of Protocol I directs that, "[a]ttacks shall be limited strictly to military objectives. In so far as objects are concerned, military objectives are limited to those objects which by their nature, location, purpose or use make an effective contribution to military action […] offers a definite military advantage".

55 Art 75(3) of Protocol I mandates that, "[a]ny person arrested, detained or interned for actions related to the armed conflict shall be informed promptly, in a language he understands, of the reasons why these measures have been taken".

56 Noone & Noone "The debate over autonomous weapons systems" (2015) *Case W. Res. J. Int'l L.* 31.

57 Heyns (2017) *SAJHR* 4.

58 Heyns (2017) *SAJHR* 8.

59 Umbrello "Lethal autonomous weapons: designing war machines with values" (2019) *Delphi – Interd. Rev. of Emerging Tech.* 3.

60 Heyns (2017) *SAJHR* 2.

61 Sauer (2020) *Int. Rev. Red Cross* 240.

62 As above.

63 As above.

advances are of no humanitarian concern, and to the contrary assist in protecting military soldiers.[64]

As a result, computer autonomy may eventually limit or destroy human autonomy and control over the environment.[65] AWS now has the ability to disguise the identity of the decision-maker, unlike prior innovations in conventional warfare that merely granted the soldier authority over absolute vigorous weaponry. AWS is now becoming a soldier.[66] AWS may even drastically alter how war is fought.[67]

## 2.2 Defining AWS

Emphasis should be placed on identifying the technological specifications that need to or ought not to be included whilst defying LAWs.[68] Defining lethal weapon systems is not problematic; however, incorporating autonomy dramatically complicates the subject. From a philosopher's perspective, autonomy gives an AI machine moral value[69] and independence. Yet, to a roboticist, it only entails giving decision-making authority to a computer.[70]

In establishing a binding definition, four approaches can be followed. The separative approach eliminates principles that are not pertinent to the CCW whereas acquiring the relevant principles.[71] The cumulative approach adds traits and determines their applicability.[72] The accountability-oriented approach characterises LAWs in terms of the degree of machine autonomy or loss of MHC, as well as the kinds of acts that are delegated to the machines.[73] The results-oriented approach concludes the repercussions that need to be avoided while defining LAWs.[74]

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64 Sauer (2020) *Int. Rev. Red Cross* 242.

65 Art 55(1) of Protocol I provides protection against the natural environment and directs that, "[c]are shall be taken in warfare to protect the natural environment against widespread, long-term and severe damage […]". Sec 24 of the Constitution: "Everyone has the right (a) to an environment that is not harmful to their health or wellbeing; and (b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures".

66 Heyns (2017) *SAJHR* 3.

67 Jacobson "Searching for meaningful human control" in *DIPLO Policy Papers and Briefs No.10* (presented at the April 2018 meeting on Lethal Autonomous Weapons Systems) 2.

68 Jacobson (2018) 4.

69 Jenkins (2017) *FLFWA* 120.

70 Nakamitsu (2017) 35.

71 Jacobson (2018) 3.

72 Jacobson (2018) 4.

73 As above.

74 As above.

The accepted limited definition solely focused on lethality, absolute autonomy, self-learning,[75] and the inability to turn off the system once it is turned on,[76] specifically that, LAWs will stop appearing predictable and dependable if they can make adjustments.[77] In this section, LAWs shall generally be defined as the capability to carry out an assault on a chosen target without human involvement or approval, either when selecting the target or executing the attack,[78] or command.[79]

To a greater extent, systems that are not totally autonomous but still carry out necessary tasks independently during the targeting cycle need to be considered,[80] likewise, AWS that are not meant to be lethal in nature can nonetheless employ force and cause a considerable amount of damage, for the reason that because adherence to the IHL is precipitated by the use of force,[81] not by a weapon's intended level of lethality or autonomy.[82]

However, it will be challenging to distinguish amongst systems that may hypothetically cause harm,[83] such as AWS, and LAWs designed to terminate people without the use of the term lethality.[84] Even so, it is not possible to define an evolving system that is yet to be developed.[85] Therefore, in defining AWS, a more comprehensive grasp of new AI technologies within the context of LAWs should be embraced.[86]

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75 Seixas-Nunes (2021) *Brook. J. Int'l L*. 429.

76 Jacobson (2018) 4.

77 As above. Art 36(1) of the Charter of the United Nations and Statute of the International Court of Justice, 1945 (hereinafter UN Charter) pertains to the settlement of disputes and provides that "at any stage of a dispute […] recommend appropriate procedures or methods of adjustment".

78 As defined under Art 49(1) of Protocol I: "Attacks" means "acts of violence against the adversary, whether in offence or in defence." Einstein (1912): "There is no defence in science against the weapons which can now destroy civilization". Art 49(2) furthermore provides: "The provisions […] with respect to attacks apply to all attacks in whatever territory conducted".

79 Nakamitsu (2017) 35.

80 Jacobson (2018) 4.

81 Art 2(4) of the UN Charter directs all members to act in accordance with the principle that "[a]ll Members shall refrain in their international relations from the threat or use of force […] or in any other manner inconsistent with the purposes of the [UN]."

82 Jacobson (2018) 4.

83 Roff "Lethal autonomous weapons and jus ad bellum proportionality" (2015) *Case W. Res. J. Int'l L.* 42.

84 Jacobson (2018) 4.

85 As above.

86 As above.

## 2.3 Types of AWS

### 2.3.1 Unmanned aerial vehicle

Since drone technology has distinct functions, it advances rather rapidly.[87] Drones can be used as a benchmark for the anticipated spread of technology in the field of LAWs.[88] Thirty-eight countries utilise armed drones, and twelve have carried out drone attacks.[89] Users of drones provide non-autonomous users with a preview of what is to come and show that, despite increased aerial defence capabilities, new vulnerabilities are emerging.[90] Additionally, there is a chance that terrorist organisations and non-state entities could obtain control over LAWs,[91] for instance when Iran was able to take control of a US autonomous drone in 2011.[92]

Drones hold substantially high levels of vulnerability and unpredictability.[93] Drones can easily be deceived and their systems tampered with.[94] AWS is susceptible to manipulation by altering the context that they detect or by reprogramming, including that of fooling and ultimately defeating a target based on facial recognition.[95] The probability of flaws in a weapons system's software develops along with the system's complexity. These programming defects may have serious consequences, such as friendly fire.[96] This problem is made more difficult by the inescapable necessity of routine system updates, which raises the risk of additional problems and failures due to interactions among older and newly released software.[97] Hence, the defects and probability of flaws are inevitable.[98]

87 Fourie "Lethal authority will be the next step in robotic evolution" (2018) *The Star*; Sauer (2020) *Int. Rev. Red Cross* 246.
88 Sauer (2020) *Int. Rev. Red Cross* 246.
89 As above.
90 Sauer (2020) *Int. Rev. Red Cross* 247.
91 Jacobson (2018) 2.
92 Sauer (2020) *Int. Rev. Red Cross* 247.
93 As above.
94 Sauer (2020) *Int. Rev. Red Cross* 248.
95 As above.
96 As above.
97 As above.
98 As above.

The Taranis, a combat UAV, is capable of engaging in surveillance,[99] locating targets, collecting data,[100] and executing attacks under the control of a human operator. The Harpy, a fire-and-forget UAV system, is being designed to locate, strike, and dismantle radar transmitters.[101]

### 2.3.2 Submersible ballistic missile nuclear-powered submarine

Another illustration is the employment of maritime autonomous systems for SSBN submarine hunting.[102]

### 2.3.3 Autonomous sentry self-aiming gun turret robot

The Samsung SGR-1 can identify, target, and fire invaders while patrolling the demilitarised zone between North and South Korea, however, a human operator must still authorise the strike.[103]

### 2.3.4 Long-range anti-ship missile

Although the region and targets are currently predetermined in the algorithm, an LRASM is being designed to autonomously navigate to a designated location, circumvent obstacles on its route, and attack ships.[104]

## 2.4 Advantages

The reaction time for individuals is 0.5 seconds between stimuli and action. For instance, if a commanding officer orders to engage a target and children unexpectedly emerges, the military is probable to fire nevertheless since they are at a loss to react quickly enough. Such judgments might potentially be made much more quickly by an AWS while also taking into consideration the climate's frequent changes.[105]

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99 Littenberg & Beliveau "U.S. State Department Issues Human Rights Compliance Guidance for Products and Services with Surveillance Capabilities" (2021) *J. of Rob. Artif. Intell. Law* 7.

100 Art 46 of Protocol I relates to spies and sub-art 2 provides that, "[a] member of the armed forces of a Party to the conflict who […] gathers or attempts to gather information shall not be considered as engaging in espionage if, while so acting, he is in the uniform of his armed forces." However, will an UAV be regarded as a "spy" caught gathering information of military value?

101 Jacobson "Lethal autonomous weapon systems: mapping the GGE debate" in *DIPLO Policy Papers and Briefs, No. 8* (2017) 2.

102 Sauer (2020) *Int. Rev. Red Cross* 251.

103 Jacobson (2017) 2.

104 As above.

105 Jacobson (2018) 3.

High levels of autonomy in AWS might result in more accurate performance than systems run by humans.[106] LAWs could be beneficial from military and humanitarian standpoints, including that of the IHL.[107] One of AWS's main advantages is due to the minimalistic military injuries.[108]

## 2.5 Conclusion

The military advantages of AWS include new levels of force multiplication, the potential for "swarming", lower personnel costs, and increased stealth in the electromagnetic spectrum. Most importantly, however, is the elimination of the lag time that would inevitably occur between a remote human operator's command and the system's response.

AWS claims to make combat more humanitarian by assisting in preventing some of its worst horrors. Machines never panic, overreact, or seek retribution since they are incapable of feeling fear, tension, or exhaustion, therefore opening the door to the possibility of using military force strictly in conformity with IHL.[109]

In a utilitarian sense, this accumulates toward an appropriate ethical advantage. In conclusion, when compared to particular weapon categories that have recently been the target of humanitarian disarmament, AWS has greater potential for transformation and has more and better military benefits associated with it.[110]

106 As above.
107 Jacobson (2018) 3.
108 Jacobson (2018) 2.
109 Sauer (2020) *Int. Rev. Red Cross* 243.
110 Sauer (2020) *Int. Rev. Red Cross* 244.

# Chapter 3

## 3 Treaties

### 3.1 Introduction

Treaties empower nations to declare certain weapons objectionable. Although in times of conflict, nations frequently infringe on binding treaties.[111] Nevertheless, even in the absence of formal treaties, states have occasionally abstained from utilising AWS.[112]

While some treaties place more emphasis on the purpose of the weapon, others have highly specified definitions that forbid certain weapons.[113] A few treaties prohibit the development and storage of particular weapons. The number of specific weapons that states are permitted to possess in peacetime is restricted by arms limitation treaties. Other treaties allow the use of weapons in combat under some conditions, but not others.[114]

The CCW is a unified legal framework that seeks to achieve an equilibrium between the need for military *sine qua non* and the need for humanitarianism.[115] The CCW is perfectly equipped to serve as the framework within which the legal, military, and humanitarian challenges arise out of the deployment of LAWs because of its profound foundations in IHL.[116]

South Africa ratified the Geneva Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May be Deemed to be Excessively Injurious or to Have Indiscriminate Effects, 1980, known as the Convention on Certain Conventional Weapons (CCCW) by accession on 13 September 1995.[117]

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111 Art 33(1) of the UN Charter pertains to the settlement of dispute and stipulate that "[t]he parties to any dispute, the continuance of which is likely to endanger the maintenance of international peace and security, shall, first of all, seek a solution by negotiation, enquiry, mediation, conciliation, arbitration, judicial settlement […] or other peaceful means of their own choice." The Introduction of the UDHR states that "[v]iolations have been prevented; independence and autonomy have been attained. They have obtained justice for wrongs".

112 Nakamitsu (2017) 28.

113 Nakamitsu (2017) 29.

114 As above.

115 Nakamitsu (2017) 2.

116 As above.

117 ICRC "Treaties, states parties and commentaries" (n.d.) https://ihl-databases.icrc.org/applic/ihl/ihl.nsf/States.xsp?xp_viewStates=XPages_NORMStatesParties&xp_treatySelected=500 (accessed 30 September 2022).

### 3.2 International treaties ratified by South Africa

From the treaties[118] it can be noted that South Africa ratified the following treaties regulating the Protection of victims of armed conflicts: Geneva Conventions I-IV dated 12 August 1949 on 31 March 1952; Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I) dated 8 June 1977 on 21 November 1995;[119] Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of Non-International Armed Conflicts (Protocol II) dated 8 June 1977 on 21 November 1995; Convention on the Rights of the Child dated 20 November 1989 on 16 June 1995; and Optional Protocol to the Convention on the Rights of the Child on the involvement of children in armed conflict dated 25 May 2000 on 24 September 2009.

South Africa ratified the Rome Statute of the International Criminal Court (ICC) on 27 November 2000.

South Africa ratified the following treaties regulating the Protection of Cultural Property in the Event of Armed Conflict:[120] Convention for the Protection of Cultural Property in the Event of Armed Conflict dated 14 May 1954 on 18 December 2003; and Second Protocol to the Hague Convention of 1954 for the Protection of Cultural Property in the Event of Armed Conflict dated 26 March 1999, on 11 February 2015.

South Africa ratified all the treaties regulating Weapons: Protocol for the Prohibition of the Use of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare dated 17 June 1925, on 22 January 1930; Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction dated 10 April 1972, on 3 November 1975; Convention on Prohibitions or Restrictions on the Use of Certain Conventional

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118 State Parties to the Following IHL and Other Related Treaties as of 18 October 2022, available at https://ihl-databases.icrc.org/applic/ihl/ihl.nsf/xsp/.ibmmodres/domino/OpenAttachment/applic/ihl/ihl.nsf/9BAAA63F11831CEFC1258841002D1FDA/%24File/IHL_and_other_related_Treaties.pdf?Open (accessed 19 October 2022).

119 The preamble to Protocol I specifically states that: “Proclaiming their earnest wish to see peace prevail among peoples, Recalling that every State has the duty, in conformity with the Charter of the [UN], to refrain in its international relations from the threat or use of force […] or in any other manner inconsistent with the purposes of the [UN], Believing it necessary nevertheless to reaffirm and develop the provisions protecting the victims of armed conflicts and to supplement measures intended to reinforce their application”.

120 The Introduction of the UDHR “promises to all […] a life free from want and fear”.

Weapons which may be deemed to be Excessively Injurious or to have Indiscriminate Effects dated 10 October 1980, on 13 September 1995;[121] Protocol on Non-Detectable Fragments (Protocol I) dated 10 October 1980, on 13 September 1995; Protocol on Prohibitions or Restrictions on the Use of Mines, Booby-Traps and Other Devices (Protocol II) dated 10 October 1980, on 13 September 1995; Protocol on Prohibitions or Restrictions on the Use of Incendiary Weapons (Protocol III) dated 10 October 1980, on 13 September 1995; Protocol on Blinding Laser Weapons (Protocol IV) dated13 October 1995, on 26 June 1998; Protocol on Prohibitions or Restrictions on the Use of Mines, Booby-Traps and Other Devices as amended on 3 May 1996 on 26 June 1998; Amendment to the Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons which may be deemed to be Excessively Injurious or to have Indiscriminate Effects dated 21 December 2001, on 24 January 2012; Protocol on Explosive Remnants of War (Protocol V) dated 28 November 2003, on 24 January 2012; Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction dated 13 January 1993, on 13 September 1995; Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on their Destruction dated 18 September 1997, on 26 June 1998; Convention on Cluster Munitions dated 30 May 2008, on 28 May 2015; Arms Trade Treaty dated 2 April 2013, on 22 December 2014; Treaty on the Prohibition of Nuclear Weapons dated 7 July 2017, on 25 February 2019.

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121 Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May Be Deemed to be Excessively Injurious or to have Indiscriminate Effects as amended on 21 December 2001: “Recalling that every State has the duty, in conformity with the Charter of the [UN], to refrain in its international relations from the threat or use of force […] or in any other manner inconsistent with the purposes of the [UN]. Basing themselves on the principle of international law that the right of the parties to an armed conflict to choose methods or means of warfare is not unlimited […] and methods of warfare of a nature to cause superfluous injury or unnecessary suffering, Also recalling that it is prohibited to employ methods or means of warfare which are intended, or may be expected, to cause widespread, long-term and severe damage to the natural environment, Desiring to contribute to […] the aspiration of all peoples to live in peace, Reaffirming the need to continue the codification and progressive development of the rules of international law applicable in armed conflict.” The 1980 CCCW provides that: “The Convention […] applies two general customary rules of [IHL] to specific weapons. These customary rules are (1) the prohibition on the use of weapons that are indiscriminate and (2) the prohibition on the use of weapons of a nature to cause unnecessary suffering or superfluous injury […] the Convention does not lessen the obligation of States to refrain from using weapons not covered by the Convention, but which would nonetheless violate customary rules of [IHL]. The Convention seeks to protect civilians from the effects of weapons used in an armed conflict and to protect combatants from suffering in excess of that necessary to achieve a legitimate military objective.”

## 3.3 Conclusion

It should, however, be noted that there is currently no legislation in South Africa governing AWS; neither the National Conventional Arms Control Act 41 of 2002, nor the Firearms Control Act 60 of 2000. However, the Constitution of the Republic of South Africa, 1996 together with the Universal Declaration of Human Rights, year, (UDHR)[122] provides some fundamental protection. Nevertheless, total warfare is still a very real prospect.[123]

122 The Introduction of the UDHR provides that the rights "are inalienable entitlements of all people, at all times, and in all places".

123 Lindsey (1970) *The Late Great Planet Earth* 147. As can be seen from the current ongoing Ukraine and Russia conflict.

# Chapter 4

## 4 Legal, moral, and ethical challenges

### 4.1 Introduction

AWS raises several challenges which severely test, *inter alia*, the existing legal framework, ethical and moral challenges,[124] and accountability, all due to the lack of technical limitations on the execution of LAWs.[125] The CCW reached an informal consensus that the autonomous forceful target utilisation ought not to be placed at AWS's disposal.[126] The aim of CCCW

> "is to ban or restrict the use of specific types of weapons that are considered to cause unnecessary or unjustifiable suffering to combatants or to affect civilians indiscriminately".[127]

CCW meetings focus primarily on autonomy in decisions concerning lethal force rather than all military applications of autonomy.[128]

Most importantly, how does AWS stand up to scrutiny against humans in the same circumstances, and should there be complete adherence to IHL regulations?[129] The challenges AWS bring and the potential harm[130] they might cause global peace and security are the driving forces behind this chapter.[131]

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124 Umbrello (2019) *Delphi – Interd. Rev. of Emerging Tech.* 2.

125 Nakamitsu (2017) 6.

126 Nakamitsu (2017) 7.

127 Wild "Bid to ban autonomous killing machines" (n.d.) *Sabinet Online*; Nxumalo "No 'killer robot' plans for SANDF" (2018) *Daily News*; Shea (2021) *TCLR* 125; Sauer (2020) *Int. Rev. Red Cross* 235. Art 35 of Protocol I provides that: "1. In any armed conflict, the right of the Parties to the conflict to choose methods or means of warfare is not unlimited. 2. It is prohibited to employ weapons […] and methods of warfare of a nature to cause superfluous injury or unnecessary suffering. 3. It is prohibited to employ methods or means of warfare which are intended, or may be expected, to cause widespread, long-term and severe damage to the natural environment".

128 Nakamitsu (2017) 22.

129 Heyns (2017) *SAJHR* 6. The preamble of the UDHR states that: "Whereas a common understanding of these rights and freedoms is of the greatest importance for the full realization of this pledge". Art 28 of the UDHR provides that "[e]veryone is entitled to a […] order in which the rights and freedoms […] can be fully realized."

130 Roff (2015) *Case W. Res. J. Int'l L.* 42.

131 Art 1(1) of the UN Charter sets out the purpose of the UN, "[t]o maintain international peace and security, and […] the prevention […] of acts […] breaches of the peace […] which might lead to a breach of the peace".

## 4.2 Legal challenges

### 4.2.1 An introduction of AWS under IHL

This section addresses the main aspects of AWS under IHL and ICRC. For purposes of exploring the legal challenges, AWS is defined as:

> "Any weapon system with autonomy in its critical functions—that is, a weapon system that can select (search for, detect, identify, track or select) and attack (use force against, neutralize, damage or destroy) targets without human intervention."[132]

As a start, for adherence with IHL and satisfying ethical concerns, the ICRC has suggested that States establish limitations by evaluating the type and level of MHC necessary in the use of AWS to execute attacks.[133]

### 4.2.2 Adherence with IHL

The priority from a human rights approach should be how AWS influences the right to life, which is sometimes referred to as the most supreme right.[134] The utilisation of AWS may only be permitted in conformity with IHL.[135] The following are a military AWS user's main legal responsibilities:

> "to ensure distinction between military objectives and civilian objects, combatants and civilians, and active combatants and those hors de combat; to determine whether the attack may be expected to cause incidental civilian casualties and damage to civilian objects, or a combination thereof, which would be excessive in relation to the concrete and direct military advantage anticipated, as required by the rule of proportionality; and to cancel or suspend an attack if it becomes apparent that the target is not a military objective or is subject to special protection, or that the attack may be expected to violate the rule of proportionality, as required by the rules on precautions in attack."[136]

The right to life is generally understood as a protection against the "arbitrary" deprivation of life. Arbitrary deprivation of life can be defined as the taking of life in a manner that violates international law.[137] The right to life consists of two parts: the ban of "arbitrary" murder and accountability in circumstances when it does transpire.

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132 Nakamitsu (2017) 5.

133 Nakamitsu (2017) 6. Art 43(2) of the UN Charter provides that "agreements shall govern the numbers and types of forces, their degree of readiness and general location, and the nature of the facilities and assistance to be provided."

134 Heyns (2017) *SAJHR* 4. Sec 11 of the Constitution protects that everyone has the right to life.

135 Nakamitsu (2017) 7.

136 As above.

137 Heyns (2017) *SAJHR* 7. See Art 6 of the International Covenant on Civil and Political Rights, 1966 (ICCPR).

Parallel to an armed war, the right to life still relates.[138] Serious IHL violations must be inquired thoroughly, and if necessary, they should be prosecuted.[139] The right to life is compromised to the degree that any of the IHL regulations are disregarded when AWS utilise deadly force.[140]

The IHL regulations impose duties on the military when they employ AWS to launch assaults, and it is up to adversaries to uphold these regulations and accept accountability for any infringements. Neither binding IHL regulations, nor accountability, can be transferred to a computer, software application programming language, or AWS.[141]

Therefore, utilising AWS should comply with IHL,[142] and despite everything, the existing IHL regulations do not sufficiently address the challenges with LAWs.[143]

The IHL principles[144] of distinction, proportionality,[145] and precaution are particularly crucial in this context.[146] Each operation must adhere to these principles as a whole. The IHL principle of distinction aims to reduce the immediate consequences of armed strikes on residents and others who are not engaging in these operations, by forbidding the attack of such individuals.[147]

The AI limitations of current sensors,[148] the difficulty of converting IHL terminology and the concepts of a civilian and a combatant into coding and a robot's incapacity to

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138 Wild (n.d.) *Sabinet Online*; Nxumalo (2018) *Daily News*; Heyns (2017) *SAJHR* 7.

139 Heyns (2017) *SAJHR* 7. Art 146 of Geneva Convention IV.

140 Heyns (2017) *SAJHR* 7. The preamble of the UDHR provides that: "Whereas disregard and contempt for human rights have resulted in barbarous acts which have outraged the conscience of mankind, and the advent of a world in which human beings shall enjoy freedom of speech and belief and freedom from fear and want has been proclaimed as the highest aspiration of the common people".

141 Nakamitsu (2017) 7.

142 Nakamitsu (2017) 8.

143 Jacobson (2017) 4.

144 Hauptman "Autonomous weapons and the law of armed conflict" (2013) *MLR* 171.

145 Van Den Boogaard "Proportionality and autonomous weapons systems" (2015) *J. Int. Humanit. Leg. Stud.* 260.

146 Art 2(6) of the UN Charter directs members to "act in accordance with these Principles […] for the maintenance of international peace and security".

147 Heyns (2017) *SAJHR* 7. In terms of Art 48 of Additional Protocol 1 to the Geneva Conventions, 1949: "the Parties to the conflict shall […] distinguish between the civilian population and combatants and between civilian objects and military objectives and accordingly shall direct their operations only against military objectives". At no time shall parties make civilians the object of attack. The principle of distinction is a rule of customary IL.

148 Littenberg & Beliveau (2021) *J. of Rob. Artif. Intell. Law* 7.

recognise context, are some of the different components that may make it challenging for AWS to follow the principle of distinction.[149]

When AWS cannot adequately differentiate between soldiers and civilians,[150] its utilisation would be prohibited.[151] AWS may find it challenging to identify whether a person is a soldier in the military or a member who actively engages in hostilities and may therefore be targeted, compared to a member of law enforcement or a hunter who set forth a gun, a person who is injured and *hors de combat*,[152] or a person who carries a weapon but about to surrender[153] and who may not be targeted.[154] Will AWS be able to properly establish a true *hors de combat*, women,[155] and children?[156]

The proportionality principle of IHL,[157] on the other hand, mandates that the anticipated harm[158] to citizens be calculated before the strike versus the expected military benefit to be obtained from the procedure.[159] If citizens are likely to suffer considerable harm, the operation should not take place in comparison to the military benefit.[160] In most cases, proportionality[161] implies and necessitates distinctly human and subjective judgment.

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149 Heyns (2017) *SAJHR* 7. Art 55 of the UN Charter sets out some of the principles, specifically pertaining to distinction: "With a view to the creation of conditions […] for peaceful and friendly relations among nations based on respect for the principle of equal rights and self-determination of peoples, the [UN] shall promote […] human rights and fundamental freedoms for all without distinction as to race, sex, language, or religion".

150 Art 48 of Protocol I states that "the Parties to the conflict shall at all times distinguish between the civilian population and combatants and between civilian objects and military objectives and accordingly shall direct their operations only against military objectives".

151 Heyns (2017) *SAJHR* 7. Rule 1 of the Rules of Customary IHL requires that "parties to the conflict must at all times distinguish between civilians and combatants". See also Art 8(2)(*b*)(xx) of the Rome Statute of the ICC, 1998.

152 Art 41 of Protocol I safeguards an enemy *hors de combat*: "A person who is […] *hors de combat* shall not be made the object of attack".

153 Art 38(1) of Protocol I: "It is also prohibited to misuse deliberately in an armed conflict […] signs or signals, including the flag of truce".

154 Heyns (2017) *SAJHR* 8.

155 Art 76 of Protocol I provides for the protection of women.

156 Art 77 of Protocol I provides protection of children.

157 Van Den Boogaard (2015) *J. Int. Humanit. Leg. Stud.* 260.

158 Roff (2015) *Case W. Res. J. Int'l L.* 42.

159 Art 51(5)(*b*) of Additional Protocol I to the Geneva Conventions, 1977: "the following […] are to be considered as indiscriminate: (b) an attack which may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, which would be excessive in relation to the concrete and direct military advantage anticipated".

160 Art 51(5)(*b*) of Protocol I.

161 Van Den Boogaard (2015) *J. Int. Humanit. Leg. Stud.* 260.

Common sense, good faith, and the "reasonable military commander standard"[162] are all concepts that the current legal conceptions of the principle of proportionality[163] expressly rely on. It is beyond comprehension that these notions might be easily coded into software algorithms in the near foreseeable future. AWS will not be able to evaluate military benefits very well. The significance of a subject in the execution of a military operation establishes the extent of allowable collateral damage changes over time and is influenced by a variety of factors, including the phase of the fight.[164]

Additionally, IHL mandates that all reasonable precautions be taken by participants in a military conflict to reduce innocent casualties.[165] It might be claimed that AWS is better suited to satisfy this condition due to their capacity to hover over a target and their ability to employ computers to determine the assault trajectory which is less inclined to lead to innocent deaths.

The question of whether utilising AWS will provide a window to stray from predetermined or encoded strategies in the event of an unforeseen event occurring. Targeting technology will undoubtedly advance in the future, which may reduce the requirement for human intervention to achieve accuracy.[166]

### 4.2.3 The Martens Clause

The outcome, death, remains the same regardless of whether or not a missile was launched by a sentient or a computer, seeing IHL rules are adhered to in all other respects, there ought to be no specific legal repercussions. Full machine autonomy over crucial operations involving the use of force against people ought not to be allowed for grounds related to the right to life as well as the right to dignity.[167]

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162 Art 87 of Protocol I advances the Duty of Commanders: "3. The […] Parties to the conflict shall require any commander who is aware that […] persons under his control are going to commit or have committed a breach of the Conventions […] to initiate such steps as are necessary to prevent such violations of the Conventions […] and, where appropriate, to initiate disciplinary or penal action against violators thereof".

163 Van Den Boogaard (2015) *J. Int. Humanit. Leg. Stud.* 260.

164 Heyns (2017) *SAJHR* 9.

165 Art 57 of Additional Protocol I to the Geneva Conventions: "(1) In the conduct of military operations, constant care shall be taken to spare the civilian population, civilians and civilian objects".

166 Heyns (2017) *SAJHR* 10.

167 Preamble to the UN Charter: "determined to save succeeding generations from the scourge of war, which twice in our lifetime has brought untold sorrow to mankind, and to reaffirm the faith in fundamental human rights".

IHL contains an underlying stipulation that the determination to employ lethal force must be made by a rational human being and may not be assigned to an AWS.[168]

Both article 1(2) of Additional Protocol I to the Geneva Conventions and the preamble to Additional Protocol II to the Geneva Conventions, specifically references the "principles of humanity and the dictates of public conscience" termed the Martens Clause.[169]

The Martens Clause establishes a nexus between moral challenges, IHL, and AWS evaluation.[170] With the absence of effective regulatory treaties, the IHL provides protection by the Martens Clause stipulating "the principles of humanity, and the dictates of the public conscience"[171] in instances where human life and death decisions are bequeathed to machines beyond MHC.[172]

### 4.2.4 MHC under IHL

Determining the necessary limitations on AWS ensuring IHL compliance, yet remains an unresolved subject, however:

> "Views on appropriate human involvement with regard to lethal force and the issue of delegation of its use are of critical importance to the further consideration of LAWs".[173]

Effective adherence to IHL standards requires some degree of MHC in that the users are responsible for abiding by these regulations and must be held accountable for transgressions.[174] The degree of MHC required to ensure effective adherence to IHL is AWS's validated intended use, as established during the development stage, specifying operational limitations during activation stages, retaining

168 Heyns (2017) *SAJHR* 14. Art 1(2) of Additional Protocol I to the Geneva Conventions, 1899, and 1907 Hague Conventions; Hague Convention with Respect to the Laws and Customs of War on Land and its Annex: Regulation Concerning the Laws and Customs of War on Land (Hague Convention II).

169 Nakamitsu (2017) 8. Art 1(2) of Protocol I states that: "civilians and combatants remain under the protection and authority of the principles of international law derived from established custom, from the principles of humanity and from the dictates of public conscience".

170 Jenkins (2017) *FLFWA* 120; Nakamitsu (2017) 8.

171 Nakamitsu (2017) 8.

172 Bhala (2019) *Pretoria News*; Anon (2018) *Daily News*; Bhalla (2020) *Business Day*; Nakamitsu (2017) 9; Steyn (2021) *Business Day*.

173 UN Recommendations to the 2016 Review Conference submitted by the Chairperson of the Informal Meeting of Experts para 2(b). Nakamitsu (2017) 11.

174 Nakamitsu (2017) 11.

MHC permitting intervention, and deactivation amid the operation stage. Therefore, AWS necessitates limitations concerning adherence with IHL.[175]

### 4.2.5 Accountability

As technology develops, the IHL targeting regulations will inevitably become more stringent. A greater degree of control implies a greater degree of accountability.[176] From the standpoint of human rights,[177] the right to life is infringed when there is an arbitrary deprivation of life and sufficient responsibility is lacking. Accountability for war crimes is well substantiated in IHL,[178] and attention is shifting more and more toward accountability for other transgressions.[179]

It may be challenging to determine who is responsible[180] since there are multiple hubs in the military chain of command, and there are concerns that ambiguous accountability may encourage injustice.[181] In the event of a violation of IHL, it is possible that the lines of responsibility are not always clear, leading to legal accountability.[182]

A State may be held accountable for IHL violations initiated by the activation of an AWS under the doctrine of state responsibility.[183] In fact, under general international law, which regulates the responsibilities of States, they would be held accountable for internationally unlawful activities, including IHL breaches by their armed forces while

175 Nakamitsu (2017) 15.

176 According to the African Commission on Human and Peoples' Rights General Comment 3 on the Right to Life: "The use […] of new weapons technologies […] should only be envisaged if they strengthen the protection of the right to life of those affected".

177 The foreword of the UDHR reads that "[t]he [UDHR] […] produced a document that […] articulated the rights and freedoms to which every human being is equally and inalienably entitled."

178 Art 91 of Protocol I transfer responsibility: "A Party to the conflict which violates the provisions of the Conventions or of this Protocol shall […] be liable […] It shall be responsible for all acts committed by persons forming part of its armed forces."

179 Heyns (2017) *SAJHR* 11.

180 Dunlap "Accountability and autonomous weapons: much ado about nothing" (2016) *Temp. Int'l & Comp. L.J.* 65.

181 Jacobson (2017) 4. The preamble of the UDHR provides that: "Whereas recognition of […] inalienable rights of all members of the human family is the foundation of freedom, justice and peace in the world".

182 Nakamitsu (2017) 16.

183 Crootof "War torts: accountability for autonomous weapons" (2016) *U. Pa. L. Rev.* 1355 & 1402; Ford "Autonomous weapons and international law" (2017) *S. C. Law Rev.* 475; Beard "Autonomous weapons and human responsibilities" (2014) *Georget. J. Int. Law* 663.

utilizing AWS.[184] A State would also be liable if it used an AWS without conducting proper testing or evaluation.[185]

MHC over an AWS might make it challenging, under international criminal law (ICL) and IHL, to hold those responsible for the coding (development stage) and installation (activation stage) of the weapon accountable for grave IHL offences. Once an AWS is activated, it may autonomously specify and execute targets, users who coded or initiated the AWS might lack the expertise[186] or intent required to be held accountable.[187] Software developers may not have been informed of the specific circumstances in which the AWS would subsequently be utilised wherein IHL breaches might occur, and operators might not be aware of the precise moment and exact location of an attack once activated.[188]

Fewer errors[189] will occur since AWS aims more accurately than humans, but errors will occur. Who will accept moral[190] and legal accountability over those errors is a major controversy. Arguments were raised that AWS creates a void in accountability and, from that standpoint, may violate a person's right to life.[191]

Nonetheless, a coder who activates an AWS that is unable to function lawfully in that circumstance or who deliberately develops an AWS to execute in contravention of IHL would undoubtedly be criminally accountable[192] for any consequent violations. In addition, the determination to utilise an AWS is considered negligent in the instances whereby a user consciously intends to initiate an AWS whose output and consequences are unpredictable and will face criminal culpability for any gross violations of IHL.[193]

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184 Beard (2014) *Georget. J. Int. Law* 663; Ford (2017) *S. C. Law Rev.*475; Crootof (2016) *U. Pa. L. Rev.* 1355 & 1402. Art 85 of Protocol I regulates repression of breaches of this Protocol: "the following acts shall be regarded as grave breaches […] when committed wilfully, in violation […] and causing death or serious injury to body or health".

185 Ford (2017) *S. C. Law Rev.* 475; Beard (2014) *Georget. J. Int. Law* 663; Crootof (2016) *U. Pa. L. Rev.* 1355 & 1402; Nakamitsu (2017) 16.

186 Noone & Noone (2015) *Case W. Res. J. Int'l L.* 31.

187 Dunlap (2016) *Temp. Int'l & Comp. L.J.* 65.

188 Nakamitsu (2017) 17.

189 Noone & Noone (2015) *Case W. Res. J. Int'l L.* 31.

190 Jenkins (2017) *FLFWA* 120.

191 Heyns (2017) *SAJHR* 12.

192 Crootof (2016) *U. Pa. L. Rev.* 1355 & 1402.

193 Nakamitsu (2017) 17.

Law, however, is directed at people, and those who organize, approve of, and execute attacks are legally responsible. These duties and obligations cannot be delegated to a device.[194]

The obvious answer to flaws on the battleground could include the urge for specialised innovations rather than traditional notions of human responsibility in a future wherein computers prevail and authority is justified by algorithms. This necessitates a radical shift in how we see the right to life given that responsibility is a component of the preservation of such a right.

The issue is that AWS cannot be held meaningfully accountable[195] for its acts if it reaches a certain level of autonomy. The exercise of control over a scenario by the person being held accountable is a crucial component of accountability. Historically, accountability has only ever included people.[196]

### 4.2.6 Final observations

The military has duties under IHL regulations regarding the utilisation of AWS to maintain conformity with IHL.[197] As stated above, states remain accountable for designing, establishing, and implementing LAWs and are required to establish criminal culpability and accountability.[198]

The essential basis of law is the human being. Algorithms cannot make moral judgments.[199] Another challenge is whether Article 36 can be applied to evaluate self-learning[200] or self-programmable systems in particular, given that these systems' parameters potentially evolve every time they have been utilised.[201] It may be more challenging to establish responsibility and civil liability for AWS that operate on the premise of self-learning[202] as compared to regulated pre-programmed

194 Jacobson (2017) 4.
195 Dunlap (2016) *Temp. Int'l & Comp. L.J.* 65.
196 Heyns (2017) *SAJHR* 12.
197 Nakamitsu (2017) 18. Art 42 of the UN Charter: “Should the […] measures provided for in Article 41 would be inadequate […] it may take such action […] as may be necessary to maintain or restore international peace and security”.
198 Jacobson (2018) 6.
199 Jenkins (2017) *FLFWA* 120; Jacobson (2018) 6.
200 Seixas-Nunes (2021) *Brook. J. Int'l L*. 429.
201 Jacobson (2018) 7.
202 Seixas-Nunes (2021) *Brook. J. Int'l L*. 429.

algorithms, since the self-taught logic made by the AWS are inscrutable, cryptic, and constructed in a "black box".[203]

Should AWS become capable of coding its own algorithms, their determinations and conclusions will become indecipherable by humans.

### 4.3 Moral challenges

As stated above, it has been claimed that machines provide an objective method of choosing where to apply force rather than a purely subjective one.[204] AWS is designed to react to their situation in a general fashion, without considering the particulars of a unique, individual instance. The individual who writes a lethal algorithm or activates a completely AWS cannot have the complete image in mind that will exist when force is ultimately used.[205]

It is debatable whether and how to include moral principles and international law in the algorithms that operate AWS.[206] Computer uniformity could simply be too dull for life's intricacy. No matter how advanced AI is, it cannot ensure that we will arrive at the truth —that is, the only correct answer— in any given situation.[207] Without ongoing human consciousness,[208] war is only mechanical killing.

Machines must not be afforded the ability to determine a person's life and death since machines lack morality.[209] Machines are incapable of comprehending the value of life or the consequences of sacrificing it. Even though some people lack these attributes as well, robots can never possess them by their sheer design. Pulling the trigger

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203 Jacobson (2018) 6.

204 Heyns (2017) *SAJHR* 15.

205 Heyns (2017) *SAJHR* 16.

206 Saket "Lethal autonomous weapons: a conundrum of morality and legality" (2020) *Supremo Amicus* 10; Roach & Eckert (eds) (2020) Moral responsibility in twenty-first-century warfare: just war theory and the ethical challenges of autonomous weapons systems part II; Jenkins (2017) *FLFWA* 120; Jacobson (2017) 3.

207 As set out in the foreword of the UDHR: "It has become a yardstick by which we measure right and wrong. It provides a foundation for a just and decent future for all".

208 Art 1 of the UDHR states that "[a]ll human beings are born free and equal in dignity and rights. They are endowed with reason and conscience and should act towards one another in a spirit of brotherhood".

209 Steyn (2021) *Business Day*; Bhala (2019) *Pretoria News*; Roach & Eckert (eds) (2020) part II; Bhalla (2020) *Business Day*; Anon (2018) *Daily News*; Jenkins (2017) *FLFWA* 120; Saket (2020) *Supremo Amicus* 10.

concerning the decision to scatter human blood cannot be made by bloodless devices.[210]

### 4.4 Ethical challenges

Serious ethical questions remain about the viability of entrusting life-and-death choices to AWS as they are equipped with autonomy and other attributes that intend to match and outperform human capacities and judgment.[211] To restrict life-threatening decisions, limitations should be placed since it is inevitably past the point of no return to employing AWS.[212] Additionally, it has historically been challenging to apply IHL values in the execution of military goals, and it is much less likely that AWS will be able to uphold ethical codes of conduct.[213]

There may not be many logical reasons in the eyes of AWS developers to limit AWS's destructive capabilities,[214] whereas the utilisation of AWS might result in brutally effective warfare.[215] Such a profoundly unethical outlook stresses the debate to limit the use of AWS.[216] It is therefore cardinal for developers, in applying fundamental ethical standards, to exclude humanly characteristic concepts that become more and more machine-like, as it reflects the intention of developers to bestow non-human objects with human traits[217] owing to the notion that the differences between human and non-human systems are insignificant.[218]

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210 Heyns (2017) *SAJHR* 15.

211 Steyn (2021) *Business Day*; Bhalla (2020) *Business Day*; Anon (2018) *Daily News*; Bhala (2019) *Pretoria News*; Nakamitsu (2017) 49.

212 Nakamitsu (2017) 50; Anon "UN chief: we must work towards a world without nuclear weapons" (2018) *Daily News*; Chapter VII of the UN Charter regulates actions with respect to threats to the peace, breaches of the peace and acts of aggressions, specifically Art 39: "determine the existence of any threat to the peace, breach of the peace […] and shall make recommendations, or decide what measures shall be taken […] to maintain or restore international peace and security".

213 Toscano "Friend of humans: an argument for developing autonomous weapons systems" (2015) *JNSLP* 198; Nakamitsu (2017) 51.

214 Art 40 of Protocol I states that "[i]t is prohibited to order that there shall be no survivors, to threaten an adversary therewith or to conduct hostilities on this basis".

215 Nakamitsu (2017) 52. Art 30 of the UDHR provides that "[n]othing in this Declaration may be interpreted as implying […] to perform any act aimed at the destruction of any of the rights and freedoms set forth herein". Pope Paul VI (n.d.): "A war would be an irreversible and fatal occurrence. It would not be the end of difficulties but the end of civilization".

216 Nakamitsu (2017) 52.

217 As above.

218 Nakamitsu (2017) 53. Art 6 of the UDHR provides that "[e]veryone has the right to recognition everywhere as a person before the law".

This insignificant difference, or to the contrary, significant similarities, not only bestow non-human objects with human traits but also describe humans with programming terminology, such as a complex system containing a mere collection of components, to suggest that ethical values may be generated by both human and non-human objects, undifferentiated.[219]

Whether machines are capable of upholding human ethical standards, not because AWS increasingly resembles humans, but instead of humans perceiving themselves very much like machines, should be regulated and the appropriateness of the "ethical conscious computer" and "software programmed human" parallel limited.[220]

Although it is undeniable that humans fail to behave ethically relentlessly, AWS developers have strengthened their case by making the erroneous claim that people act unethically constantly. Assuming that machines will be superior to humans without resembling genuine human moral or ethical judgment, would be fatal.[221]

## 4.5 Other challenges

Moreover, notwithstanding the legal, moral, and ethical challenges, a broad discussion on security-, robotic-, military- and religious perspectives will follow briefly.

### 4.5.1 Security challenges

Security challenges comprise the prevention of emergency development due to errors, malfunctions, or ineffective management of soldiers and the implementation of safety protocols and effective communication.[222] AWS is unable to comprehend human intention at the existing level of AI. The insubstantiality and rigidity of AWS might remove a crucial security regulator in emergencies —human judgment— increasing the likelihood of a security breach.[223]

AWS might fail to cease executing instantaneously, should humans surrender, abort or decide to terminate the war,[224] since the speed of AWS on the battlefield would

219 Nakamitsu (2017) 53.
220 As above.
221 Jenkins (2017) *FLFWA* 120; Nakamitsu (2017) 53.
222 Nakamitsu (2017) 21.
223 Nakamitsu (2017) 24.
224 Nakamitsu (2017) 25.

immeasurably surpass human judgment,[225] inherently resulting in the most inhumane sequel, peace erupting into full-scale war.[226]

### 4.5.2 Robotic challenges

Concerns of whether and how lethal autonomous robotics can abide by the rules of war as well as, or, better than people are raised by the development of such systems.[227] Key factors for the usage of these robots consist of force multiplication, expanding the battle space, extending the war fighter's reach, and casualty reduction.[228]

Robots lack human weaknesses such as the ability to act conservatively, self-righteousness, objections against self-sacrificing, poor visibility in fog, emotions, clouded judgment, fear, anger, frustrations, hysteria, and psychological complications.[229] Yet, ethical robotic challenges involve ambiguous laws, imprecise clauses, vague rules, conflicting solutions, and unclear principles. [230]

Hence, disputes remain unresolved regarding the best or most appropriate framework.[231]

### 4.5.3 Military challenges

Notwithstanding the constant advancement in the composition of warfare, automated warfare will expand the combat calibre, having a considerable influence on militaries. Nations are mandated to establish legal limitations and legal recourses against LAWs.[232]

Although AWS cannot determine by itself to commence warfare, it is plausible to argue that an AWS cannot command an objective all by itself.[233] LAWs pose both military

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225 Nakamitsu (2017) 26.
226 As above. Art 2(3) of the UN Charter directs Members to act in a manner that "shall settle their international disputes by peaceful means […] that international peace and security, and justice, are not endangered".
227 Nakamitsu (2017) 38.
228 Nakamitsu (2017) 37.
229 Nakamitsu (2017) 39; Umbrello (2019) *Delphi – Interd. Rev. of Emerging Tech.* 3.
230 Nakamitsu (2017) 40.
231 As above.
232 Nakamitsu (2017) 61.
233 Nakamitsu (2017) 58.

advantages and risks. As a result, militaries must cautiously integrate these weapons throughout overall combat standards.[234] The question is unresolved, can it be expected that AWS implement appropriate precautions and actions?

### 4.5.4 Religious challenges

Many religious[235] perspectives place a strong emphasis on hope. Our spiritual ability to hope can be destroyed if AWS is seen to be a legitimate and lawful aspect of the society in which we exist. The majority of individuals, regardless of origin or religious or atheistic upbringing, crave confidence about the future.[236] Most have the irrational anxiety that humanity may not have a future at all, which affects their dreams, goals, and hopes.[237]

Exterminating hope could challenge some of our long-held beliefs about the world we inhabit and the degree to which we view it as a place where compassion, forgiveness, and mercy might be found.[238]

I have hope in the prospect of the future, yet again, "the future" business is a booming business.[239] The worth of human life, in general, is impacted by this issue. This is essential, can AI offer solutions to the most fundamental and fundamentally human questions? The Book, the Bible, "not only contains truth, but also the great themes of peace, love, and hope, which are the desires of this and every other generation."[240]

Death at the hand of a human and death at the end of a machine are two completely distinct phenomena.[241]

> "Here, then, is the problem which we present to you, stark and dreadful and inescapable: shall we put an end to the human race or shall mankind renounce war? We appeal, as human beings

234 Nakamitsu (2017) 61.
235 Art 18 of the UDHR provides that "[e]veryone has the right to freedom of thought, conscience and religion". Sec 15 of the Constitution relates to freedom of religion, belief and opinion: "(1) Everyone has the right to freedom of conscience, religion, thought, belief and opinion".
236 Demosthenes, 348 B.C: "We believe whatever we want to believe".
237 Lindsey (1970) 17.
238 Heyns (2017) *SAJHR* 18.
239 Lindsey (1970) 16.
240 Lindsey (1970) 17.
241 Kennedy (1961): "Mankind must put an end to war — or war will put an end to mankind"; Steyn (2021) *Business Day*; Bhalla (2020) *Business Day*; Anon (2018) *Daily News* and Bhala (2019) *Pretoria News*.

> to human beings; remember your humanity and forget the rest. If you can do so, the way lies open to a new paradise; if you cannot, there lies before you the risk of universal death."[242]

At the end of World War II, it was said:

> "We have had our last chance. If we will not devise some greater and more equitable system, Armageddon[243] will be at the door."[244]

> "The earth is utterly broken, the earth is rent asunder, the earth is violently shaken. The earth staggers like a drunken man, it sways like a hut.".[245]

In some way or another, the pace of history keeps accelerating toward Christ's second coming.

While seeking peace throughout history,[246] humankind's primary legacy has been war.[247]

> "This desire is like the people of Jeremiah's day who said, '[…]peace, peace when there is no peace' (Jeremiah 6:14)".[248]

Mankind cannot prevent war since humanity does not grasp the fundamental causes of conflict, nor embrace solutions to these causes. Mankind has a greedy, egocentric nature within, where sin originates. Sin is essentially selfish-centred, pursuing circumnavigation, and wandering away from God. Mankind cannot prevent war, nor consistently live in harmony with themselves, their family, their neighbours, or, on a larger scale, with other countries due to their deep-seated egotistical character. By not amending our hearts, the inevitable outcome would be bloodshed.[249]

The IHL acknowledges the principle of the dignity of the dead.[250] Dignity requires the capacity to act morally,[251] to be autonomous in making moral decisions, and taking responsibility for the results. Fully AWS might eradicate the chance of being a moral

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242 Lindsey (1970) 147. A quote by Bertrand Russell, "Has Man a Future?" (Simon & Schuster: New York, 1962).
243 Lindsey (1970) 148: "The last great war which the Bible calls Armageddon".
244 Lindsey (1970) 150.
245 Isaiah 20:19 & 20.
246 Toscano (2015) *JNSLP* 198.
247 Lindsey (1970) 146.
248 As above.
249 Lindsey (1970) 148.
250 Art 32 of Protocol 1 states that "the right of families to know the fate of their relatives". Art 34(1) of Protocol I pertains to the remains of a deceased and states that. "[t]he remains of persons who have died for reasons related […] shall be respected, and the gravesites of all such persons shall be respected". Oppenheimer (n.d.): "In the next war, none of us can count on having enough living to bury our dead."
251 Jenkins (2017) *FLFWA* 120.

person by substituting humans with machines,[252] a warning that man might not have much time left.[253]

If we do not find solutions to these challenges within the next ten years, they will eventually become uncontrollable.[254]

Isaiah 2:4 is engraved on a wall near the United Nations (UN) building reading:

> "they shall beat their swords into plowshares and their spears into pruning hooks; nation shall not lift up sword against nation, neither shall they learn war any more" known as the Isaiah Wall, co-incidental a prohibition on the use of force as set out under Article 2(4) of the Charter of the [UN], similarly reading that: "All Members shall refrain in their international relations from the threat or use of force against the territorial integrity or political independence of any state, or in any other manner inconsistent with the Purposes of the [UN].".[255]

Contemplating the following, would you consider it hopeful, on the verge of death, to surrender amid a war to find yourself pleading for mercy in front of a machine?

### 4.5.5 Transparency challenges

Due to the secrecy involved in these procedures, it is challenging to determine the actual degree to which these weapons are manufactured and used.[256] Owing to its dual nature, AWS intended for civilian use may potentially be converted into LAWs, further complicating the situation.[257]

Without transparency, nations may be encouraged to launch their own concealed research projects out of concern that prospective enemies may be secretly producing forbidden weapons,[258] especially if the only difference between a forbidden and permissible AWS is the software, unperceivable from the exterior.[259]

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252 Heyns (2017) *SAJHR* 19.

253 Lindsey (1970) 3; Matthew 24: 22, Jesus Christ, A.D. 33: "You will be hearing of wars and rumours of wars — then there will be a great tribulation, such as has not occurred since the beginning of the world until now, nor ever shall. And unless those days had been cut short, no life would have been saved".

254 Lindsey (1970) 3.

255 Louth "Isaiah's echo: progress, prophecy, and the UN Charter" (2013) https://www.ejiltalk.org/isaiahs-echo-progress-prophecy-and-the-un-charter/#:~:text=The%20full%20quote%20comes%20from,they%20learn%20war%20any%20more.%E2%80%9D (accessed 22 October 2022); Anon (2018) *Daily News*.

256 Jacobson (2017) 1; Gibson, Dunn & Critcher "Artificial intelligence and automated systems legal update (1Q22)" (2022) https://www.gibsondunn.com/artificial-intelligence-and-automated-systems-legal-update-1q22/ (accessed 6 June 2022) at 7.

257 Jacobson (2017) 4.

258 Nakamitsu (2017) 32.

259 As above.

### 4.5.6 Technical challenges

Remarkably little is known about the technology supporting existing AWS, and people are unaware of how to evaluate and analyse these technologies.[260] Lacking appropriate data, AWS can sway human judgment, adversely affecting the human controller's perception.[261] Once AWS's underlying algorithms exhibit errors and inefficiencies to this extent, this could be particularly challenging.[262] Although it might be challenging to pinpoint when AWS transitions from automated to semi-autonomous or autonomous.[263]

The necessity to keep up with the swift breakthroughs of the invention is driven by the ticking bomb.[264] The algorithms might process noises or visuals incorrectly.[265] For instance, the channels of a constant line of contact between an AWS and a command post can be compromised,[266] effectuating the potential for hacking and unauthorised interference with AWS.[267]

## 4.6 Conclusion

Understanding the ethical ramifications of AWS is complicated by their current state of development, but even after they may be produced and utilised, the software will need to be constantly tracked and investigated to comprehend how it develops and how it will affect moral and legal structures.

Ethical principles take the same course of action: although universal human values might seem to be very well-defined and universally recognised, they demand persistent contemplation.[268] Whenever there is additional complexity brought on by the blurring boundaries between the civil and military domains, a binding legally limited agreement is used.[269]

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260 Jacobson (2018) 6.
261 As above.
262 As above.
263 Jacobson (2017) 2.
264 Jacobson (2018) 3.
265 Jacobson (2018) 2.
266 Jacobson (2018) 5.
267 Jacobson (2018) 2.
268 Nakamitsu (2017) 55.
269 Jacobson (2018) 3.

Therefore, we must not cease to effectively influence the design of AWS, similarly constantly striving to enhance our understanding of human ethics.[270] Additionally, coders and developers may be held liable under product liability provisions for software inaccuracies or the malfunctioning of an AWS.[271]

Regardless of if LAWs might adhere to international law, particularly IHL and human rights legislation, remains a matter of legal debate.[272] This debate was succinctly summed up in the following key question: if the use of AWS would therefore reduce error[273] levels, is it recommendable to have a fully AWS able to minimise harm[274] to innocent people, yet without MHC, or is it recommendable for humans to make the most important decisions on life and death, with the risk of human error?[275]

With the upcoming technological interventions and vast challenges, we face in connection with AWS, it is unquestionable that there is a need to incorporate ethics and law into the coursework of AI systems engineers,[276] along with providing education in scientific and technological engineering fields for all legal practitioners and legislators.[277]

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270 Nakamitsu (2017) 56.
271 Nakamitsu (2017) 17.
272 Jacobson (2018) 3.
273 Noone & Noone (2015) *Case W. Res. J. Int'l L.* 31.
274 Roff (2015) *Case W. Res. J. Int'l L.*42.
275 Bhala (2019) *Pretoria News*; Jacobson (2018) 3; Anon (2018) *Daily News*; Bhalla (2020) *Business Day*; and Steyn (2021) *Business Day*.
276 Del Monte, L. A. (2021), page 213.
277 Jacobson (2018) 6.

# Chapter 5

## 5 What should be done?

### 5.1 Introduction

Whether the current international instruments are extensive enough to satisfy the above challenges, is the main concern. If they are not, is it necessary to establish additional statutes or merely modify the existing instruments? What should be done?

The topic of autonomy in weapons is interrelated and necessitates a multidisciplinary approach.[278] First and foremost, I will unfold and clarify why it is so arduous for CCW State Parties to get consensus on effective international regulation of LAWs.[279] Global debates on LAWs are centred around the CCW.[280]

I furthermore argue the necessity of MHC over the use of force since the corporate strategy and ethical challenges exceed the reasonably practicable military advantages. At last, suggestions will follow for how regulation could well be implemented in reality, despite the tremendous challenge of mobilising adequate political will among CCW States Parties. Ultimately, wrapped up with a succinct conclusion.[281]

The international stop Killer Robots Campaign (KRC) perceived and criticised the CCW for low ambitions, insignificant developments, vagueness, and redundancy.[282] The KRC insists on an immediate negotiation and urged for a new, binding legal instrument as a matter of urgency.[283]

To regulate autonomy in weapon systems, the challenging task of codifying a legally binding to retain MHC awaits.[284] The unavoidable challenge emerges in the necessity to draft a new and updated defined AWS "language", within the framework of the

278 Nakamitsu (2017) vi.
279 Dawes "UN fails to reach consensus on 'killer robot' ban" (2021) *Cape Argus*; Sauer (2020) *Int. Rev. Red Cross* 237.
280 Sauer (2020) *Int. Rev. Red Cross* 235.
281 Sauer (2020) *Int. Rev. Red Cross* 237.
282 Sauer (2020) *Int. Rev. Red Cross* 236.
283 Sauer (2020) *Int. Rev. Red Cross* 237.
284 Sauer (2020) *Int. Rev. Red Cross* 236.

CCCW.[285] Nonetheless, regulation is imperative, as legal, moral, and ethical menace are greater than military benefits from unrestrained AWS.[286]

Even while it may be argued that establishing MHC and prohibiting AWS are obverse, they reflect various perspectives on the subject matter.[287]

The essence should fall upon regulation, instead of banning, when it comes to amending and codifying a binding international law, preventing prohibition of AWS, instead regulating LAWs.[288]

Identifying suitable terminology and a sufficient regulatory process for the retaining of meaningful human control (MHC) seems to be what renders regulating LAWs so extraordinarily problematic, especially given the significant military value attributed to unrestrained weapon autonomy.[289] Autonomy applied unrestrictedly in all types of AWS, in all operational domains, and against all targets, including people, poses more concerns than advantages.[290]

The primary justification why regulating AWS is arduous stems from the fact that CCW States Parties are contested to collectively explicitly state how future targeting processes can be constructed so that MHC over the use of military force is retained as opposed to identifying a common definition of LAWs.[291] The secondary reason is the increasingly vital military value attached to it.[292]

AWS's effectiveness is considered to alter the playing field for military purposes.[293] Therefore, our goal should be to both create a shared conceptual understanding and an accurate grasp of technology and its military uses. That would make it possible to explore policy alternatives objectively.[294]

The topic is controversial because robots and AI, the systems that underlie LAWs, have both military and civilian applications. The concern is that limitations on LAWs

285 Sauer (2020) *Int. Rev. Red Cross* 235.
286 Sauer (2020) *Int. Rev. Red Cross* 236.
287 Sauer (2020) *Int. Rev. Red Cross* 237.
288 Nxumalo (2018) *Daily News*; Wild (n.d.) *Sabinet Online*; Sauer (2020) *Int. Rev. Red Cross* 237.
289 Sauer (2020) *Int. Rev. Red Cross* 237.
290 Sauer (2020) *Int. Rev. Red Cross* 242.
291 As above.
292 As above.
293 Sauer (2020) *Int. Rev. Red Cross* 243.
294 Nakamitsu (2017) 4.

might oppress growth for the use of these technologies in civilian applications. Whilst innovations created for domestic use could be developed into deadly weapons.[295]

Since there is not a widely accepted definition of LAWs, I concentrated on characterising LAWs and considering the role of MHC in the use of deadly force, which many regards to be the distinguishing characteristic of AWS. Even though the definition of MHC is still up in the air, there appears to be an increasing agreement regarding the importance of MHC in the crucial LAWs tasks of choosing and attacking a target.[296]

This chapter aims to provide readers with a better grasp of the properties of LAWs and the level of significant MHC required for their inception and use.

## 5.2 Regulating AWS

The Constitution of the Republic of South Africa, 1996 provides for the protection of the right to life, human dignity, freedom and security of the person, equality,[297] children's rights, and the right to a fair trial.[298] The issue of whether LAWs could adhere to the IHL standards demands attentiveness.[299] Adherence under IHL does not necessarily require AWS to perform blatantly deadly functions. For instance, other non-lethal weapons are made for military use, such as AWS blasting rubber bullets or tear gas.

A definition that includes such AWS will stifle innovation, while excluding such systems may create a risky loophole in the law.[300] Concerns were raised that since the current legal structure recognizes human accountability, any limitations to the law might result in a vacuum of accountability.[301]

The underlying golden thread, particularly in terms of potential regulation of AWS,[302] is not whether an AWS is automated or autonomous, but rather which targets it

295 Jacobson (2017) 1.
296 Jacobson (2018) 1.
297 See sec 9(1) of the Constitution.
298 See secs 10 (human dignity), 11 (life), 12 (right to freedom and security), 28 (children's rights) & 35 (the right to a fair trial) of the Constitution.
299 Jacobson (2017) 4.
300 Jacobson (2017) 3.
301 Jacobson (2017) 4.
302 Martin, Ho & Sherling (2020) *J. of Rob. Artif. Intell. Law* 6; Reeves *et al* "Challenges in regulating lethal autonomous weapons under international law" (2021) *Southwest. J. Int. Law* 102.

attacks.[303] LAWs will be established without regulation if no international limitations are placed.[304] Regulation of AWS is imperative from an ethical perspective as set out above and will be discussed below.[305]

### 5.2.1 Complexity

Regulating AWS is difficult.[306] Most CCW State Parties agree that LAWs present several legal-, military-, and moral challenges.[307] Regulating AWS is an extraordinarily and relentlessly challenging task.[308] First, the question of weapon autonomy is rather subtle and difficult to grasp. Secondly, its projected military worth is immense, and the present global climate does not welcome substantial developments in weapons control.[309]

The challenges regarding AWS cannot be said that the CCW State Parties have not yet reached a consensus[310] on what defined LAWs entail but are due to the notion that endeavouring to define LAWs was flawed from the start. Definitional difficulties undoubtedly afflicted the definition of LAWs to avoid anthropomorphising LAWs as a one-to-one substitute for human soldiers, as well as to resolve disagreements over remotely piloted aerial vehicles (drones).[311]

The fundamental theory was that before any regulatory decision could be implemented, arms control always necessitated a precise classification of the object in consideration.[312] Where and when AWS begins and ends is not always straightforward.[313]

The inability to predict the future creates further difficulties. If these LAWs are not currently in existence, when will they be produced and what will they bear a

303 Sauer (2020) *Int. Rev. Red Cross* 241.
304 Reeves *et al* (2021) *Southwest. J. Int. Law* 102; Jacobson (2017) 5.
305 Reeves *et al* (2021) *Southwest. J. Int. Law* 102; Sauer (2020) *Int. Rev. Red Cross* 241.
306 Sauer (2020) *Int. Rev. Red Cross* 238.
307 As above.
308 As above.
309 As above.
310 Dawes (2021) *Cape Argus*.
311 Sauer (2020) *Int. Rev. Red Cross* 238.
312 Sauer (2020) *Int. Rev. Red Cross* 238.
313 Sauer (2020) *Int. Rev. Red Cross* 239.

resemblance to? How will LAWs impact global security, the conduct of war, and the distribution of power among CCW State Parties?[314]

It is challenging to establish a definition with these challenges in mind.

Consequently, difficulty arises in creating a new norm to transform the interaction between humans and robots in modern warfare.[315] It necessitates a new diplomatic terminology, which neither States Parties nor civil society is yet proficient in, to understand the underlying technological developments.[316] Fortunately, the process of comprehending the problem and articulating it diplomatically has initiated and has made some headway. The discussion is increasingly centred on the formulation of a positive requirement of MHC over armed systems.[317]

Attention should be placed on the controversial term of LAWs to the extent where the initially expected jargon such as lethality and autonomy are precluded as determining factors.[318] The concept of “autonomy” wrongly humanises robots and machines void of critical thinking, reflection, and reasoning, and is incompetent to assume responsibility.[319]

### 5.2.2 Necessity

For an extended duration, academics have been focused on the possible effects of unregulated AWS on military forces as well as on international stability and world peace.[320] The two main effects of unregulated AWS are strategic repercussions and ethical repercussions.

#### 5.2.2.1 Strategic repercussion

Strategic repercussions included technology diffusion, new operational vulnerabilities, escalation risks, crisis instability, and strategic instability. As discussed above, technology diffusion and new operational vulnerabilities are explained under UAVs. Escalation risks and crisis instability refer to whereby AWS which operates short of

314 Jacobson (2017) 2.
315 Sauer (2020) *Int. Rev. Red Cross* 239.
316 As above.
317 As above.
318 Sauer (2020) *Int. Rev. Red Cross* 237.
319 As above.
320 Sauer (2020) *Int. Rev. Red Cross* 245.

human control introduces a new vulnerability, as well as unpredictability due to various unforeseen interactions with their surroundings, which in turn generates new dangers from undesired, unforeseen escalation.[321]

However, in the absence of an international agreement regulating AWS, unpredictable interactions of LAWs may result in the inadvertent deployment of force or even an accidentally initiated war before humans can act.[322] Compared to machines, people are more sensitive to mass mistakes.

Additionally, even though they are slower and occasionally make mistakes, people make better administrators than robots.[323] They can comprehend unexpected situations and their context, as well as think critically about decisions and consider the magnitude of the accountability that goes along with them.[324]

Regarding strategic instability, the strategic level notices the consequences of AWS's expanding capacity.[325] One such sophisticated capability that contributes to this growing complexity and, in turn, weakens strategic stability is autonomy in AWS.[326]

As a concluding remark on strategic risk and instability, while weapon autonomy provides military advantages, it also introduces new security risks and, more crucially, adds to a general increase in strategic risk and instability. When operating speed is increased beyond what humans can comprehend, people are no longer a useful fail-safe against unintended escalation.[327]

#### 5.2.2.2 Ethical repercussion

An ethical perspective contends that LAWs concern fundamental standards that supersede the laws of war and mere IHL compliance, subsequently violating human

321 Sauer (2020) *Int. Rev. Red Cross* 249.
322 As above.
323 Art 82 of Protocol I: "[…] shall ensure that legal advisers are available, when necessary, to advise military commanders at the appropriate level on the application of the Conventions and this Protocol and on the appropriate instruction to be given to the armed forces".
324 Sauer (2020) *Int. Rev. Red Cross* 250.
325 Sauer (2020) *Int. Rev. Red Cross* 251.
326 As above.
327 Sauer (2020) *Int. Rev. Red Cross* 252.

dignity.[328] The UDHR makes provision for human dignity in the foreword and is furthermore enshrined in Articles 7,[329] 10 (dealing with the rights of those deprived of their liberty),[330] 23(3), as well as in the UN Charter.[331] Opposing arguments that AWS violates human dignity were analysed.[332]

A basic data point supplied to LAWs, converts a victim to a mere object and target, enabling algorithms to make lethal determinations, thus breaching human dignity. This is the main ethical implication of weapon autonomy in an AWS crucial operation.[333] The use of LAWs against people is often regarded as an intolerable violation of human dignity since giving the authority to murder via an algorithm nullifies human life.[334]

A machine taking human life has no understanding of what its action signifies, that being murdered is a consequence of an algorithmic decision and the fatalities that ensue are meaningless in the absence of a conscious to utilise violence.[335] Machines murdering people based on software outputs denies them the right to be acknowledged as people at the time of death.[336]

This is in violation of ethics in that it runs the risk of infringing and straying from core humanitarian principles namely the right to human dignity.[337]

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328 Sauer (2020) *Int. Rev. Red Cross* 253. The Introduction of the UDHR reads that, "[i]n perhaps the most resonant and beautiful words of any international agreement, "all human beings are born free and equal in dignity and rights".

329 "Every individual shall have the right to the respect of the dignity inherent in a human being and to the recognition of his legal status. All forms of […] inhuman or degrading punishment and treatment shall be prohibited". Art 5 of the UDHR states that, "no one shall be subjected to torture or to cruel, inhuman or degrading treatment or punishment".

330 Art 3 of the UDHR provides that, "everyone has the right to life, liberty and security of person." Art 11 of Protocol I states that: "The physical or mental health and integrity of persons […] shall not be endangered by any unjustified act or omission."

331 Charter of the UN and Statute of the International Court of Justice, 1945.

332 Sauer (2020) *Int. Rev. Red Cross* 253.

333 Sauer (2020) *Int. Rev. Red Cross* 254.

334 As above. Art 75 of Protocol I provides fundamental guarantees and Art 75(2) directs: "The following acts are and shall remain prohibited at any time and in any place whatsoever […] (a) violence to the life […] (e) threats to commit any of the foregoing acts."

335 Sauer (2020) *Int. Rev. Red Cross* 255.

336 As above.

337 As above. See Common Article 3 to the Geneva Conventions, 1949; Art 75(2) of Additional Protocol I and Art 4(2) Additional Protocol II to the Geneva Conventions, 1949; Art 8(2)(*c*)(i)-(ii) of Statute of the ICC.

### 5.2.3 Attainability

States may find themselves in a better position to establish policies, such as a potential code of conduct or legally enforceable instrument after a prospective political statement is produced.[338]

The view that mandated preferences over life and death on the battleground violates an enshrined moral line is opposed most in comparison to legal issues or concerns about unintended escalation risks or crisis instability.[339] Thus, the perception that there is inherently something wrong with executing people with mindless AWS ignites the CCW State Parties to regulate AWS and retain MHC.[340]

The necessity of a unified collective vocabulary that incorporates the established perspective of weapon autonomy and the mutual comprehension of a positive duty and reinforcement of the concept of MHC over weapons systems seems attainable.[341] Since computers cannot be held accountable, MHC must be retained concerning the utilisation of AWS and execution of force.[342]

For AWS to be utilised legally, morally, and ethically, MHC should be retained whilst executing a strike.[343] Research suggests that limitations on the degree of legal autonomy in AWS under IHL are necessitated.[344] By determining the nature and level of necessary MHC in the utilisation of AWS to execute attacks to guarantee adherence with IHL,[345] the establishment of internationally accepted limitations must be placed.[346] This study furthermore equally takes into account the degree of MHC necessary to fulfil moral standards requiring supplementary limitations.

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338 Jacobson (2018) 7.

339 Bhala (2019) *Pretoria News*; Anon (2018) *Daily News*; Sauer (2020) *Int. Rev. Red Cross* 256; Bhalla (2020) *Business Day*; and Steyn (2021) *Business Day*.

340 Sauer (2020) *Int. Rev. Red Cross* 256.

341 As above.

342 Sauer (2020) *Int. Rev. Red Cross* 257.

343 Nakamitsu (2017) 18.

344 As above.

345 The introduction of the UDHR encompasses this that we should "continue working to ensure that all people can gain freedom, equality, and dignity. One vital aspect of this task is to empower people to demand what should be guaranteed: their human rights."

346 Nakamitsu (2017) 18.

### 5.3 Retain meaningful human control

Warfare has continuously been transformed by technology. But in the modern world, the elimination of human control in battle may be a technical advance that will fundamentally alter civilisation.[347]

No matter how sophisticated, fully AWS which can modify pre-programmed settings or variables, are not in compliance with international laws. The consensus was reached that AWS's ability to alter its mode of operation without human intervention is deadly, particularly when alluding to the capability of AWS to adapt by itself. States thus concurred that AWS should be developed under limitations that the AWS cannot modify itself.[348] Further development and utilisation of LAWs necessitate MHC.[349] Fundamental elements of MHC encompass:

> "Predictability and reliability of the weapon system in its intended or expected circumstances of use; human intervention in the functioning of the weapon system during its development, activation and operation; knowledge and information about both the functioning of the weapon system and the environment of its use; and accountability for the ultimate operation of the weapon system."[350]

The Martens clause provides the concerns regarding practical MHC a clear legislative framework.[351] The Martens clause as stipulated in the 1977 Additional Protocol I, provides that:

> "In cases not covered by this Protocol or by other international agreements, civilians and combatants remain under the protection and authority of the principles of international law derived from established custom, from the principles of humanity and from the dictates of public conscience."[352]

Although the clause has been construed in a variety of ways, it is contended that should a method of warfare not expressly be prohibited by IHL, it continues to be unlawful if it violates the "principles of humanity" or the "dictates of public conscience".[353]

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347 Jacobson (2017) 2.
348 Jacobson (2018) 5.
349 As above.
350 Nakamitsu (2017) 12.
351 Jacobson (2018) 5.
352 Art 1(2) of the 1977 Additional Protocols to the Geneva Conventions.
353 Jacobson (2018) 5.

The controllability of AWS can be regarded as MHC.[354] Concerning military force, it is necessary to retain MHC over the use of military force is a positive duty[355] that should be upheld.[356] To retain MHC and accountability throughout AWS operations, MHC must establish limitations on minimal requirements for controllability regulations to regulate and establish the MHC standard as enforceable international legislation.[357] Retaining MHC over AWS comprises three main stages.[358]

Firstly, the development stage, the development, programming, construction, and assessment of AWS in adherence with IHL,[359] including international frameworks, satisfying predictability as well as reliability, and integrating operational limitations.[360]

Secondly, in the activation stage, the user makes the AWS activation decision and implements the operational limitations, purpose, awareness, and risks, including calibration of the task, type of target and force, environment, mobility, time frame, and degree of human oversight and capability to execute subsequent activation.[361]

Thirdly, the operation stage, AWS utilisation where targets are autonomously identified and attacked, integrating operational limitations of the second stage, such as the degree of human oversight and capability to execute subsequent activation, predominantly adhering to IHL.[362]

Some people asserted that “continuous supervision” could be necessary to offer the opportunity for intervention when a system exhibits unpredictable behaviour.[363]

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354 Sauer (2020) *Int. Rev. Red Cross* 257.

355 Art 86 of Protocol I set forth the failures to act: “1. […] Parties to the conflict shall repress grave breaches and take measures necessary to suppress all other breaches […] which result from a failure to act when under a duty to do so. 2. […] does not absolve his superiors from penal or disciplinary responsibility […] if they did not take all feasible measures within their power to prevent or repress the breach.”

356 Sauer (2020) *Int. Rev. Red Cross* 257.

357 Sauer (2020) *Int. Rev. Red Cross* 258.

358 Nakamitsu (2017) 12.

359 Neuman *et al* “European Commission’s proposed regulation on artificial intelligence: conducting a conformity assessment for high-risk AI—say what?” (2022) *J. of Rob. Artif. Intell. Law* 9.

360 Nakamitsu (2017) 13.

361 Nakamitsu (2017) 14.

362 As above.

363 Jacobson (2018) 5.

## 5.4 Conclusion

To answer the question put forward, I do not believe it is necessary to draft a new regulation, by imposing the necessary amendments to Article 36, it should adequately answer all LAWs' challenges. Calling for a prohibition on fully AWS is contrary[364] to human rights principles and autonomy should be embraced if it results in a decrease in the lethality of AWS used in armed conflict[365] while maintaining MHC, even so, human autonomy at its ultimate level is lost if AWS is no longer instruments in human hands.[366]

Additionally, it could be necessary to set up an impartial observer to carefully monitor advancements in the development and application of AWS as well as any potential consequences.[367] Whilst AWS is found to violate IHL, this will be determined through required weapon evaluations required by Article 36 of Additional Protocol I to the Geneva Conventions, which prevent the development and deployment of any illegal weapons.[368]

The need for MHC during the invention and use of AWS was one of the various challenges where agreement was increasing.[369] The advocates of AI's potential humanitarian advantages have cited the removal of human mistakes as a key argument.[370] Whilst human intervention is built into AWS, without these limitations, computers may react to visual receptors too fast for humans to be capable of interfering.[371]

It is problematic, but attainable, to regulate AWS on a multilateral basis.[372] It's impossible to establish a universal norm since the surrounding circumstances have

364 Art 29(3) of the UDHR provides that: "These rights and freedoms may in no case be exercised contrary to the purposes and principles of the [UN]."
365 Hauptman (2013) *MLR* 171.
366 Heyns (2017) *SAJHR* 25.
367 Jacobson (2018) 7.
368 As above. Art 36 of Protocol I pertain to New Weapons and provides that: "In the study, development, acquisition or adoption of a new weapon, means or method of warfare, a High Contracting Party is under an obligation to determine whether its employment would, in some or all circumstances, be prohibited by this Protocol or by any other rule of international law applicable to the High Contracting Party."
369 Jacobson (2018) 2.
370 Jacobson (2018) 3.
371 Jacobson (2018) 6.
372 Sauer (2020) *Int. Rev. Red Cross* 235.

such a big impact.[373] In other words, there is no universally applicable norm for MHC since MHC by design calls for a minimal level of human-machine interaction.[374]

However, it is crucially necessary to regulate AWS in a way that limits autonomy in the crucial roles and maintains MHC. Since the anticipated short-term military advantages greatly outweigh the risks of unrestrained weapon autonomy in the medium and long terms, procrastination would hold disastrous repercussions.[375]

The inevitable risk of LAWs' unintended use of force without human intervention is something in the near distant future.[376] Due to automation bias, every machine failure in such an AWS will escalate exponentially if left uncontrolled by a human.[377] The distinctive function of people as a flexible fail-safe mechanism is lost when human control is removed.[378] Should humans be able to engage, interfere, and overrule machine functions, or is a generalised command sufficient?[379]

Large-scale initiatives are conveyed globally to establish limitations, guidelines, and specifications for the creation of these systems. The Institute of Electrical and Electronic Engineers Global Initiative for Ethical Considerations in Artificial Intelligence and Autonomous Systems is one such noteworthy endeavour.[380]

Last but not least, humans should retain the final authority over whether to execute lethal force and maintain effective control over LAWs.[381] To avoid obscuring the distinction between what is truly human and something that is simply human-like, we need to be careful when using terminology linked to the use and properties of AWS.[382]

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373 Jacobson (2018) 6.
374 Sauer (2020) *Int. Rev. Red Cross* 242.
375 Sauer (2020) *Int. Rev. Red Cross* 245.
376 Sauer (2020) *Int. Rev. Red Cross* 249.
377 Sauer (2020) *Int. Rev. Red Cross* 250.
378 As above.
379 Jacobson (2018) 6.
380 Nakamitsu (2017) 44.
381 Jacobson (2018) 7.
382 Nakamitsu (2017) 54.

# Chapter 6

## 6 Final remarks and Conclusions

### 6.1 Final remarks

Despite rapid evolutions in AI, we still have a considerable distance from creating AI systems that can mimic human cognition, compared to the limited, confined tasks that present AI systems are capable of. Such human cognition involves empathy and intuition, which are human qualities that we cannot anticipate machines to perceive. LAWs might be able to decide quickly and precisely, but LAWs are not capable of considering circumstances.[383]

Nonetheless, all AWS, including any possible creation or utilization of LAWs, remain to be subject to the full application of IHL.[384] States stay responsible for deploying any AWS during armed conflict,[385] and they are also in charge of holding the military responsible for any harmful action caused by such systems.[386] Prospective military uses ought to be held under evaluation due to the rapidity of technological advancement and the lack of clarity on the rise of increasing autonomy.[387]

### 6.2 Conclusion

It is complex, challenging, necessary, and yet attainable to establish a codified regulation of AWS, specifying a legally enforceable responsibility to retain MHC over the use of force. A positive obligation to retain MHC over AWS is vital. Without placing limitations on AWS, military utilisation will override the violation of human dignity and will escalate the indignity of war inevitably triggering algorithmic death.

Some limitations must not be crossed by our transfer of authority to technology, not on the battleground, nor in other spheres of life. You cannot empower the weapon

383 Jacobson (2017) 3.
384 Jacobson (2018) 2.
385 Hauptman (2013) *MLR* 171.
386 Jacobson (2018) 2.
387 As above.

to replace the role of the military official. The idea of MHC should be embraced as a guiding principle not only for the use of AWS but also for the use of AI generally.

Instead of focusing only on specific applications of such technologies, we should consider how technology as a whole will affect our future. Beyond the capabilities of human understanding, people have been consumed by a desire to comprehend what the future holds. The whole foundation of why life is precious in the first place would be undermined if AI is allowed to replace human decision-making.

The investigation into an IHL-compliant AWS should thus continue, especially since humanity has the *compos mentis* shot to incorporate historical lessons by utilising the fast-developing inventions of the twenty-first century to prevent irreparable consequences.[388] Internationally codified limitations will prevent irreparable consequences and violations of moralistic foundations.

Unpredictability and uncertainty increase the risk of violating IHL. To comply with IHL, a weapon's technical performance, the environment, and how the two interact must be predictable in the intended circumstances of its use. Unsatisfactory limitations on AI algorithms will unavoidably upshot increased casualties as the utilisation of AWS might result in brutally effective warfare.

Whether machines are capable of upholding human ethical standards, not because AWS increasingly resembles humans, but instead of humans perceiving themselves very much like machines, should be regulated and the appropriateness of the “ethical conscious computer” and “software programmed human” parallel limited.

At the end of the day, I humbly remind the reader that we, as individuals, possess human abilities and would in all probability deviate from instructions considering we are uniquely flawed. AWS on the other hand, obeys its blueprint flawlessly. As a result, AWS is theoretically less unpredictable during crises than us. By embracing AI and placing the necessary limitations on AWS, AWS could serve as an optimal soldier, following orders without knowingly violating IHL.

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388 Lindsey (1970) 148: “Why is it that in spite of the terrible lessons learned from history about war and the terrifying predictions of a future war, man keeps playing on the precipice of complete destruction?”

The past guides us. The era is enigmatic. The future intrigues us. The future is here.

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