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Autonomous weapon systems that decide whom to kill

How international humanitarian law and international human rights law regulate the development and use of offensive autonomous weapon systems during international armed conflicts

—
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All predictions agree that if man does not master technology, but allows technology to master him, he will be destroyed by technology.¹

The current moment may be the best we will have to address these concerns.²

¹ Pilloud, C., Sandoz, Y., Swinarski, C. and Zimmermann, B. (1987). *Commentary on the additional protocols of 8 June 1977 to the Geneva Conventions of 12 August 1949*. Geneva: International Committee of the Red Cross.

² Report of the Special Rapporteur on extrajudicial, summary or arbitrary executions, Christof Heyns, A/HRC/23/47, April 2013, page 8 paragraph 33.

1. Introduction

A characteristic of modern warfare is that an increasing number of remotely controlled and unmanned weapon systems are employed in military operations. Imagine that you are seated in the Nevada desert, yet that you operate an unmanned combat aerial vehicle³ (UCAV) that is about to enter the combat zone in Syria to fight against Daesh.⁴ Your UCAV is equipped with functions permitting it to take decisions without an explicit order from you, including the ability to identify a pre-programmed target which it will engage unless you abort the mission on time – it is a so-called autonomous weapon system (AWS).⁵ You have noted that the international community is discussing whether the increasing use of autonomy in weapon systems are lowering the threshold that usually refrains states from engaging in armed conflict. You are nevertheless personally convinced that your AWS with precision guiding features is more discriminate and precise when it engages and attacks – and therefore, you feel secure that the number of civilian casualties will be low.

However, you cannot help but thinking that it is easier now, as your own armed forces potential risk is about zero, to carry out attacks. You also admit to yourself that the number of civilian casualties is increasing in the same manner as the number of attacks.⁶ Anyway, your intention is to act in accordance with international as well as national law and the rules of engagement – hereunder ensure that the number of civilian losses is not excessive. Thus, as the weapon is accepted and tested before the operation, you shoo away your worries.

The AWS arrives at the destination, and starts to seek after the target. As the AWS approaches it, you realize that the interface is too comprehensive for you to fully understand what is going on in its software. Consequently, the operation may fail because of one of the following scenarios:

³ According to the Program on Humanitarian Policy and Conflict Research at Harvard University, *Manual on International Law Applicable to Air and Missile Warfare*, Bern, 15 May 2009 (HPCR Manual) Section A Article 1(ee), UCAVs mean "an unmanned military aircraft of any size which carries and launches a weapon, or which can use on-board technology to direct such a weapon to target."

⁴ Daesh – also known as the Islamic State – is a jihadist militant group.

⁵ See section 2.4.

⁶ The Guardian, *41 men targeted but 1, 147 people killed: US drone strikes – the facts on the ground*, November 24, 2014.

- i. The enemy hacks the communication link between you and the AWS, and sends it "your" way – that is, in direction of the site of your armed forces.⁷
- ii. The system malfunctions and sends its missile against a crowded playground with families, including many children.
- iii. The AWS mistakes a group of civilians for being the enemy. As you trust the system and doubt your independent judgment, it engages.
- iv. The missile – equipped with so-called fire and forget technology⁸ – does not understand that the enemy has surrendered and engages anyway.

Other scenarios may play out where the system is equipped with artificial intelligence,⁹ and the ability to learn and reason. In such cases, decisions over life, death and destruction are fully in the "hands" of the system, thus challenging both IHL and the military chain of command.¹⁰

Although made up, the above-mentioned scenarios are rooted in reality. The nature of armed conflict is rapidly changing as technological developments are leading to new means and methods of warfare¹¹ and the technological features advance in an exponential manner.¹² An example of new means are military robotic weapons,¹³ including autonomous weapon systems, which are the subjects of examination in this thesis.

⁷ Defense Update, *K-MAX Crashes on a Mission in Afghanistan*, June 17, 2013.

⁸ A term referring to a missile that is able to guide itself to its target due to multiple sensor systems. Oxford Dictionaries, see link: <http://www.oxforddictionaries.com/definition/english/fire-and-forget> (last entered April 2, 2016).

⁹ See section 2.5.2.

¹⁰ Roff, Heather M., *The Strategic Robot Problem: Lethal Autonomous Weapons in War*, *Journal of Military Ethics* (2014), 13:3,211-227, DOI: 10.1080/15027570.2014.975010.

¹¹ According to the HPCR Manual (2009), "means of warfare" mean "weapons, weapon systems or platforms employed for the purposes of attack." "Methods of warfare" mean "attacks and other activities designed to adversely affect the enemy's military operations or military capacity, as distinct from the means of warfare used during military operations, such as weapons. In military terms, methods of warfare consist of the various general categories of operations, such as bombing, as well as the specific tactics used for attack, such as high altitude bombing."

¹² Peter Singer, *Wired for War*, Penguin 2009, page 97.

¹³ Leveringhaus, A. and Gilles Giacca, *Robo-Wars: The Regulation of Robotic Weapons*, Oxford Martin Policy Papers, Oxford Martin School, University of Oxford, 2014, page 5.

AWS have become popular means of warfare. By employing them in combat, the military creates an advantageous distance between weapon and soldier.¹⁴ Thus, the militaries are able to improve the safety of the operator and minimize the risks for the soldiers which an armed conflict normally brings about. In addition, use of AWS lower the operational costs, personnel requirements and rely less on communication links than remotely controlledUCAVs.¹⁵

Although such technologies are clearly benefitting those possessing them, the international community discusses the legal and ethical implications of the development and use of AWS in a military context.¹⁶ These issues are so-called "hot potatoes", and opinions range from a total ban on further development¹⁷ to opposition to any such restrictions.¹⁸ Between these extremes, the United Nations' (UN) Special Rapporteur Christof Heyns has urged the Human Rights Council to call on all States to “declare and implement a national moratoria on at least the testing, production, assembly, transfer, acquisition, deployment and use of LARs until such time as an internationally agreed upon framework on the future of LARs has been established”.¹⁹ Thus, he called for a pause in the development of AWS in order to allow the international community to discuss the issues.²⁰

One of the concerns relate to whether militaries using AWS will be able to comply with fundamental principles²¹ and other rules of IHL – otherwise potentially weakening the rule of international law.²² Another is that the deployment of AWS will obscure the rules of accountability.²³ Ethically speaking, there is a fear that without a human cost in armed

¹⁴ Report of the Special Rapporteur on extrajudicial, summary of arbitrary executions, Christof Heyns, A/HRC/23/47, April 2013, page 8 paragraph 26 and 27.

¹⁵ Report of the ICRC Expert Meeting on “*Autonomous weapon systems: technical, military, legal and humanitarian aspects*”, 26-28 March 2014, Geneva, page 1.

¹⁶ The UN CCW meeting of experts on Lethal Autonomous Weapon Systems discussed this subject in April 2015 and 2016.

¹⁷ The Campaign to Stop Killer Robots; Human Rights Watch, *Mind the Gap: The Lack of Accountability for Killer Robots*, April 9, 2015, p. 11.

¹⁸ The Guardian, *UK opposes international ban on developing killer robots*, April 13, 2015.

¹⁹ Report of the Special Rapporteur on extrajudicial, summary of arbitrary executions, Christof Heyns, A/HRC/23/47, April 2013, page 8 paragraph 33. LAR is an abbreviation of Lethal Autonomous Robotics.

²⁰ Ibid.

²¹ See chapter 4.

²² Report of the Special Rapporteur on extrajudicial, summary of arbitrary executions, Christof Heyns, A/HRC/23/47, April 2013, page 8 paragraph 58; The Geneva Academy, Academy Briefing No. 8, *Autonomous Weapon Systems under International Law*, November 2014 page 9; P. W. Singer, page 323; HRW: *Losing Humanity*, page 6 paragraphs 30-31.

²³ HRW: *Mind the Gap*.

conflicts, possession of AWS might lower the threshold for a State to resort to force against another.²⁴ In addition, the potential development of weapon systems capable of selecting and engaging targets without neither human programming nor intervention²⁵ creates a chilling prospect of robotics deciding who lives and who dies.

Skepticism aside, automation of various tasks is not only a trend²⁶ in military contexts, but also in civilian homes²⁷ and work places.²⁸ Thus, there is clearly a positive attitude towards robotics in the international society. In the military context, what is important is that robotics seem to be indispensable to modern warfare,²⁹ creating the impression that a general prohibition is quite farfetched: states will presumably not backtrack once the technology is available.

A more pragmatic approach is to insist on AWS having to be developed and used in a manner consistent with international law, thus only banning weapon systems not capable of meeting the current requirements. Hence, states developing or using new weapons will have to comply with existing laws, and adjust the progress thereafter. The overarching questions are to what extent international humanitarian law (IHL) deems AWS unlawful, or, if they are legal *per se*, how international human rights law (IHRL) and the law of targeting regulate the conduct of hostilities when these weapons are used during an international armed conflict (IAC).

1.1. Methodology and sources

As this thesis concerns international law, it requires a different methodical approach than national law: there does exist neither any universally established methodical structure,³⁰ nor a legislature common to all states or any binding executive or enforcing institutions.³¹ The lack

²⁴ Report of the Special Rapporteur on extrajudicial, summary or arbitrary executions, Christof Heyns, A/HRC/23/47, April 2013, page 8 paragraph 58; The Geneva Academy, Academy Briefing No. 8, *Autonomous Weapon Systems under International Law*, November 2014 page 9; Singer, page 323; HRW: *Losing Humanity*, page 4.

²⁵ HRW: *Losing Humanity*, page 2; The US Department of Defense Directive, Number 3000.09, November 21, 2012, page 13-14.

²⁶ Singer (2009), page 7-8

²⁷ CNN.no, *CES 2015: The robots moving in to your house*, January 8, 2015.

²⁸ International Business Times, *BBC releases list of employees at risk at being replaced by robots*, September 17, 2015.

²⁹ Singer (2009), page 23.

³⁰ Shaw, M. N. (7th edition, 2014). *International Law*. Cambridge: Cambridge University Press, page 49

³¹ Shaw (2014), page 49.

of these features is a natural consequence of the principle that all states are inherently sovereign and with an equal legal position.³²

However, as the Statutes of the International Court of Justice (ICJ) Article 38 is generally recognized to express the sources of international law, international law does not apply in a vacuum.³³ The provision reads as follows:

“The Court, whose function is to decide in accordance with international law such disputes as are submitted to it, shall apply:

- a. international conventions, whether general or particular, establishing rules expressly recognized by the contesting states;
- b. international custom, as evidence of a general practice accepted as law;
- c. the general principles of law recognized by civilized nations;
- d. subject to the provisions of Article 59, judicial decisions and the teachings of the most highly qualified publicists of the various nations, as subsidiary means for the determination of rules of law.”³⁴

In contrast to municipal law, international law is organized as a horizontal system. This means that there is, in principle, no hierarchy of sources or rules except where peremptory norms – *jus cogens* – prohibits derogation, thus creating a vertical dimension.³⁵ However, letters a-c are viewed as the exclusive law-making sources of international law,³⁶ whereas judicial decisions and expert teachings mainly operate as additional tools for interpretation. The latter categories may also contribute to the formulation of new law where the primary sources do not provide a clear answer.³⁷

³² Shaw (2014), page 4.

³³ Ruud, M. and Ulfstein, G. (4th edition, 2011). *Innføring i folkerett*. Oslo: Universitetsforlaget, page 66.

³⁴ Statute of the International Court of Justice – 26 June 1945, Article 38 first paragraph.

³⁵ Antonio Cassese, *International Law*, Second edition (Oxford University Press, 2005), page 198-99; Vienna Convention on the Law of Treaties (VCLT), 23 May 1969 Article 53. *Jus cogens* are norms “accepted and recognized by the international community of States as a whole as a norm from which no derogation is permitted and which can be modified only by a subsequent norm of general international law having the same character”.

³⁶ Shaw (2014), 50.

³⁷ Shaw (2014), 82.

The Vienna Convention on the Law of Treaties (VCLT) Articles 31-32³⁸ contain the basic rules for interpretation of treaties, and are generally recognized as customary law.³⁹

According to Article 31, treaties must be interpreted in accordance with the universal principles of free consent and good faith, meaning that one has to seek the “ordinary meaning given to the terms of the treaty in their context and in the light of its object and purpose”.⁴⁰

As not all states have ratified every treaty and protocol and because some of the conventions have a limited territorial scope, states' specific treaty obligations are relative. Thus, customary law is of major significance in the present thesis. A rule will be considered “evidence of a general practice accepted as law” and achieve status as customary law when it qualifies as both state practice and *opinio juris*.⁴¹ This means that the content of the custom must reflect the actual conduct of a number of states⁴² and that each state is motivated by a belief that the conduct is in accordance with a legal obligation or entitlement,⁴³ and not political or moral motives.⁴⁴ Whether or not the practice is sufficient depends on the circumstances of the specific case, the nature of the usage in question⁴⁵ and any opposition to the alleged rule.⁴⁶

If neither treaty nor customary law regulate an issue, an application of general principles of the various municipal systems may close a potential legal gap.⁴⁷ It is for the judges in international courts to decide whether they can deduce a general principle of law due to an analogous interpretation of existing rules or principles guiding the municipal systems.⁴⁸

As neither treaty nor customary law directly regulate AWS, the so-called Martens Clause (the Clause), whose purpose is to prevent legal gaps in cases of armed conflict where a particular situation is not regulated in treaty law, is worth to be noticed.⁴⁹ The Clause is repeated in

³⁸ Vienna Convention on the Law of Treaties (VCLT), 23 May 1969.

³⁹ Arbitral Award of 31 July 1989, *Guinea-Bissau v. Senegal*, ICJ Reports 1991, p. 53, p. 70 para 48.

⁴⁰ VCLT, article 31.

⁴¹ *North-Sea Continental Shelf cases*, ICJ Reports, Judgment of 20 February 1969.

⁴² Cassese (2005), page 156-157.

⁴³ *North Sea Continental Shelf cases*, para 77; Shaw (2014), page 53.

⁴⁴ Shaw (2014), p. 62-63.

⁴⁵ Shaw (2014), page 54.

⁴⁶ Shaw (2014), page 55.

⁴⁷ Shaw (2014), p. 69-70.

⁴⁸ Shaw (2014), p. 70.

⁴⁹ The ICRC has suggested that the legality of a weapon should be considered in the light of the Martens Clause in case it was neither regulated by a specific restriction or prohibition nor by the general rules of IHL, see *A guide to the Legal Review of New Weapons, Means and Methods of Warfare. Measures to Implement Article 36 of Additional Protocol I of 1977*, The International Committee of the Red Cross, Geneva, January 2006.

numerous treaty provisions and preambles,⁵⁰ such as in AP I Article 1(2), where the Clause reads as follows:

"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."⁵¹

According to the International Criminal Tribunal for the former Yugoslavia (ICTY), the Clause demands that, where a rule of IHL is not sufficiently clear, "the scope and purport of the rule must be defined with reference to those principles and dictates."⁵² Both ICTY and authors call for a cautious application of the Clause,⁵³ as it does not "constitute additional standards for judging the legality of means and methods of warfare."⁵⁴

However, the Clause may put pressure on the interpretation of a potentially customary norm and may ease the demand of consistent state practice if the *opinio juris* is sufficiently strong.⁵⁵ In the words of ICTY: "principles of international humanitarian law may emerge through a customary process under the pressure of the demands of humanity or the dictates of public conscience, even where State practice is scant or inconsistent."⁵⁶ Given the public interest and campaigns against AWS, the Clause may prove significant in the discussion concerning the legality of such weapons.

In respect of the ECHR, the jurisdiction of the European Court on Human Rights (ECtHR) extends "to all matters concerning the interpretation and application of the Convention and the

It is, however, not likely that states will interpret the Clause in such a progressive manner.

⁵⁰ AP I Article 1(2); The Preamble to the 1899 Hague Convention II and the 1907 Hague Convention IV containing the Regulations on the Laws and Customs of War on Land, 8th passage; Preamble of the CCW 6th passage; GC I/II/III/IV Articles 63/62/142/158 (denunciation).

⁵¹ Pilloud, C., Sandoz, Y., Swinarski, C. and Zimmermann, B. (1987). *Commentary on the additional protocols of 8 June 1977 to the Geneva Conventions of 12 August 1949*. Geneva: International Committee of the Red Cross (Commentary on AP I), paragraph 56 and footnote 29.

⁵² *Kupreškić* case, Case No. IT-95-16-T, 14 January 2000, p. 206 para 525.

⁵³ Boothby (2014), page 89.

⁵⁴ Dinstein Y. (2nd edition, 2010), *The Conduct of Hostilities Under the Law of International Armed Conflict*, Cambridge: Cambridge University Press, page 9

⁵⁵ *Kupreškić* case, p. 209, para 531.

⁵⁶ *Kupreškić* case, p. 207, para 527.

protocols thereto."⁵⁷ The ECtHR plays a crucial role in the evolution of the rights and freedoms. It has determined, *inter alia*, that the ECHR must be regarded as "a living instrument which [...] must be interpreted in the light of present day conditions."⁵⁸ Alongside this guiding principle of interpretation, the ECtHR has identified the object and purpose of the ECHR as "the protection of individual human beings."⁵⁹ Seen together, these notions of interpretation may place the ECtHR in a dilemma where a normalization of new technologies and advanced weapon systems challenge the traditional way of thinking about protection of individuals. This may be the case where the targeting decision is taken by a machine, and not by a human.

Inherent in the whole of the ECHR is "a search for a fair balance⁶⁰ between the demands of the general interest of the community and the requirements of the protection of the individual's fundamental rights."⁶¹ Under this assessment, states are obliged to determine whether an interference with a right is "proportionate to the legitimate aim pursued."⁶² Of importance in the following discussion, is that states have a limited margin of appreciation as to the proportionality test when it comes to fundamental rights as the right to life and the prohibition against degrading or inhuman treatment.

1.2. Scope and structure of the thesis

In the present thesis, I will examine how IHL and IHRL regulate offensive⁶³ state conduct on the battlefield during an IAC. The treaties in the IHL field which are of special relevance in

⁵⁷ The ECHR Article 32(1). On the other hand, the jurisdiction of the ICJ "comprises all cases which the parties refer to it and all matters specially provided for it in the Charter of the United Nations or in treaties and conventions in force", see Statute for the International Court of Justice, June 26 1945, article 36(1).

⁵⁸ *Tyrer v. the United Kingdom*, Judgment (Merits), App. No. 5856/72, 11 March 1978, para 31.

⁵⁹ *Soering v the United Kingdom*, Judgment (Merits and Just Satisfaction), App. No. 14038/88, 7 July 1989 para 87. The dictum from *Soering* has been repeated in several decisions, see for instance *Al-Sadoon and Mufdhi v the United Kingdom*, Judgment (Merits and Just Satisfaction), App. No. 61498/08, 2 March 2010, para 127.

⁶⁰ The fair balance principle may be seen as "a basis for assessing the proportionality of respondents' interference with the Convention rights of applicants and for determining when states are subject to implied positive obligations under the Convention," see Harris, O'Boyle & Warbrick, *Law of the European Convention on Human Rights*, Third Edition (Oxford University Press, 2014), page 14.

⁶¹ *Soering v UK* para 89.

⁶² *Handyside v the United Kingdom*, Judgment (Merits), App. No. 5493/72, 7 December 1976, para 49; Harris, O'Boyle and Warbrick (2014), p. 22.

⁶³ Although the term "attack" includes both offensive and defensive acts of violence, I limit my assessment to offensive uses of AWS.

this thesis are the Hague Convention IV⁶⁴ of 1907, the Geneva Conventions of 1949⁶⁵ and Additional Protocol I to the Geneva Conventions (AP I).⁶⁶ Furthermore, the UN Convention on Certain Conventional Weapons (CCW),⁶⁷ which I will refer to by analogy, prohibits and restricts the use of certain weapons. In the IHRL domain, the right to life and the prohibition against degrading and inhuman treatment under the European Convention on Human Rights (ECHR)⁶⁸ and the International Covenant on Civil and Political Rights (ICCPR)⁶⁹ poses interesting questions in relation to the use of AWS in IACs. In addition to these treaties, customary law will largely shape the discussion.

To ensure a proper application of IHL, one must first assess whether the armed conflict in question is an international armed conflict (IAC) or a non-international armed conflict (NIAC).⁷⁰ I will limit my discussion to IACs. The underlying premise is thus that there is a situation which qualifies as an "armed conflict" between two or more states.⁷¹

In addition to restrictions as to which legal regime applies to a certain conflict, the relevant rules depend on whether the violence occurs on land, in the air or at sea. For instance, AP I article 4(3) states that

"[t]he provisions of this section apply to any land, air or sea warfare which may affect the civilian population, individual civilians or civilian objects on land. They further apply to all attacks from the sea or from the air against objectives on land but do not otherwise affect the rules of international law applicable in armed conflict at sea or in the air."⁷²

⁶⁴ Convention respecting the Laws and Customs of War on Land, enacted

⁶⁵ Geneva Convention (I) for the Amelioration of the Condition of the Wounded and Sick in Armed Forces in the Field, 12 August 1949; Geneva Convention (II) for the Amelioration of the Condition of the Wounded, Sick and Shipwrecked Members of the Armed Forces at Sea, 12 August 1949; Geneva Convention (III) relative to the Treatment of Prisoners of War, 12 August 1949; Geneva Convention (IV) relative to the Protection of Civilian Persons in Time of War, 12 August 1949.

⁶⁶ Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflict (Protocol I), enacted 8 June 1977.

⁶⁷ 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 (CCW), 10 October 1980.

⁶⁸ Convention for the Protection of Human Rights and Fundamental Freedoms, enacted 4 November 1950.

⁶⁹ The United Nation's International Covenant on Civil and Political Rights, enacted 16 December 1966.

⁷⁰ Some argue that there is a growing convergence between the sets of rules governing IACs/NIACs, see the International Law Association Committee on the Use of Force, Final Report on the Meaning of Armed Conflict in International Law (2010) (74 Int'l L. Ass'n Rep. Conf. 676 2010), page 685.

⁷¹ See section 4.1.

⁷² AP I Article 49(3).

I will focus on attacks that have effect on land, including air to ground attacks, where AP I applies.

I will examine the right to life and the prohibition against ill-treatment with a special focus on ECHR Article 2 and thus only with reference to ICCPR Article 6. The reason I will emphasize ECHR, is that the ECtHR has developed ECHR law and expanded the material reach of the ECHR so that contracting states to the ECHR have more detailed and far-reaching obligations than non-contracting states.

There are also ethical, moral and strategical concerns related to AWS.⁷³ I will focus on the legal aspects of AWS, and place strong limitations on any discussions of the other three aspects. Ethical considerations are, however, unavoidable in the present context, as they may have implications for the legality. I will nevertheless be cautious with the application of ethical concerns and only include them where the sources allow such an approach.

In the following, I seek to answer the following questions:

- i. How AWS should be defined and whether there are any legal restraints on the technology, hereunder the notion “meaningful human control.”
- ii. How IHRL may apply during an IAC.
- iii. Whether IHRL may apply extraterritorially through the use of AWS, with a special emphasis on the notion of personal jurisdiction.
- iv. How the right to life and the prohibition against inhuman or degrading treatment may limit the adversaries’ conduct during hostilities, with a special emphasis on the ECHR Article 2 and only reference to the ICCPR Article 6.
- v. Whether IHL deems AWS illegal *per se*.
- vi. Whether the use AWS may pose special challenges to the law of targeting, with a special emphasis on the obligation to take precautions in attacks and the fundamental principles of IHL.
- vii. How states ought to conduct weapon reviews in accordance with AP I Article 36

⁷³ For instance, Heather M. Roff argues that fully AWS “undermines existing command and control structures, aliminating what little power humans have over the trajectory and consequences of war.” See Roff, H. M. (2014), p. 212; Paul Scharre, *Presentantion at the United Nations Convention on Certain Conventional Weapons*, April 13, 2015, page 4.

2. Actuality and definition of autonomous weapon systems

In recent years, states and international organizations like the UN⁷⁴ and the ICRC have shown an increased interest in AWS, and various actors conduct extensive research on the issue. The subject is now heavily debated on the international arena. For instance, the UN has held expert meetings in both 2015 and 2016 concerning the legal and moral implications of autonomous weapon systems. During these conferences, experts have discussed issues relating to possible challenges under IHRL and IHL due to the increased use of autonomy in weapons. A special issue concerned how states should deal with the potential delegation of human control over the selection of targets and use of force to AWS.⁷⁵

As states are the main subjects of the international community, it is unavoidable that their point of view is the starting point for this debate. As there does not exist any authoritative source that defines AWS, I will rely on military manuals and directives in order to construe a definition of AWS.

2.1. Historical background of autonomous weapon systems

The development of robotics started with small steps, with Nikola Tesla's demonstration of a remotely controlled motorboat in 1898 as an illustrious starting point.⁷⁶ This also marked the beginning of the electrical age with crucial innovations like the radio, computer science and the Internet – all of them being important contributions to the evolution of modern technology.

Robotic features in weapon systems have been in use since the First World War,⁷⁷ with gradually expanding advancements as the years passed by. Thus, robotics has helped militaries in “identifying potential targets, tracking them, the timing of when to fire and

⁷⁴ The UN CCW meetings of experts on Lethal Autonomous Weapon Systems, April 2015 and 2016.

⁷⁵ ICRC.org, *A licence to kill for autonomous weapons?* April 17, 2015.

⁷⁶ Robert Finkelstein, *Military Robotics: Malignant Machines or the Path to Peace*, paper presented at the Military Robotics Conference, Institute for Defense and Government Advancement, Washington DC, 10-12 April 2006, revised January 2010, page 16. See also Electrical Engineer, *Tesla's Electrical Control of Moving Vessels or Vehicles from a Distance*, 17 November 1898.

⁷⁷ Peter Scharre's presentation at the CCW (2015), page 2.

maneuvering or homing them onto targets” for decades.⁷⁸ For instance, Carl Norden’s bombsight was a significant resource for the US Navy during the Second World War. The bombsight consisted of an analog computer with a mechanism capable of – once activated by an operator – dropping bombs with quite precise calculations of when and where to hit.⁷⁹ Another example is the German precision-guided drone “Fritz X” which was maneuvered with a joystick and transmitter.⁸⁰

Later on, in the 1970s, the U.S. military began to use laser-guided bombs and cruise missiles – also referred to as “smart bombs,” which are similar to the current fire and forget missiles. Smart bombs were successors of Fritz X, constructed with more advanced features. Before dropping the bomb, the operator would mark the target with laser or data. Once dropped, the bomb would automatically stay on the marked target until it hit.⁸¹

2.2. Actuality of the thesis

Although previously used, robotics as a military industry did not prosper before the attacks on USA 11 September 2001.⁸² Non-lethal precursors to present AWS debuted by participating in the rescue missions on Ground Zero. While human rescuers could not access the ruins without risking life or limbs, the robot called PackBot was able to get around.⁸³ Its abilities made a good first impression on the military, and soon PackBot served its duty in Iraq. Here, it proved to be a lifesaver in the search for and neutralizing of improvised explosive devices (IEDs) – roadside bombs used by insurgents in both Afghanistan and Iraq.⁸⁴

Remotely controlledUCAVs, from now on referred to as drones, has become a frequently used type of robotics after 2001. When the Bush Administration declared its “War on Terror”, President Bush promised that the campaign would “not end until every terrorist group of global reach has been found, stopped and defeated”.⁸⁵ Drones proved to be a useful mean to

⁷⁸ Ibid.

⁷⁹ The National Aviation Hall of Fame, *Honoring Aerospace Legends to Inspire Future Leaders: Carl Norden*; Singer, page 50.

⁸⁰ Smithsonian National Air and Space Museum, *Bomb, Guided, Ruhrstahl Fritz X (X-I)*; Peter Singer, page 48.

⁸¹ Singer (2009), page 57.

⁸² Singer (2009), page 61.

⁸³ The New York Times, *Agile in a Crisis, Robots show their Mettle*, September 27, 2001; Singer, page 23.

⁸⁴ Singer (2009), page 19-22

⁸⁵ Text of George W. Bush’s speech, The Guardian, 21 September 2001.

achieve this goal, and, according to William Boothby, the lethal attack on Qaed Senyan al-Harathi⁸⁶ in Yemen in 2002 represents the beginning of “a modern era in unmanned attacks from the air”.⁸⁷

This new era has brought with it new issues related to legality and regulation of air and missile warfare. For instance, CIA carries out drone attacks against people it has put on a classified “kill list.”⁸⁸ The secrecy surrounding these operations creates difficulties in relation to the examination and categorization of drone warfare. Thus, the US uses drones to fight terrorism due to a method called targeted killing. In an IAC, targeted killings are potentially ideal. On the contrary, in a situation where there is uncertainty in regard of the applicable law, such killings are problematic and possibly illegal use of force under international law.⁸⁹

Thus, the degree of autonomy in weapon systems and the different types of weapon systems increases. From being mainly airborne, there are now weapon systems with various degrees of autonomy suitable for both land and sea operations as well. Hence, some speak of a new military revolution, where the extensive use of unmanned drones is only the mere beginning.

2.3. Defining autonomy

Although a number of states possess and develop AWS,⁹⁰ the US and the UK are the only states known to have openly sought to clarify their policies on AWS through military directives.⁹¹

⁸⁶ Al-Harathi was believed to be a high-ranking al Qaeda member and participant in the 2000 bombing of an American destroyer, see Solis, G. (2010), *The Law of Armed Conflict*. Cambridge: Cambridge University Press, page 539.

⁸⁷ Boothby, W. (2014). *Conflict Law: The Influence of New Weapons Technology, Human Rights and Emerging Actors*, page 100.

⁸⁸ Thomas Nagel, *Really Good at Killing*, London Review of Books (Vol. 38 No. 5, March 2016).

⁸⁹ Charter of the United Nations, 26 June 1945, Article 2(4).

⁹⁰ Thurnher, J., *Means and Methods of the Future: Autonomous Systems*. Contribution in Ducheine, P.A.L., M. N. Schmitt and F. P.B. Osinga (2016), *Targeting: The Challenges of Modern Warfare*. The Hague: T.M.C. Asser Press, p. 181.

⁹¹ Report of the ICRC Expert Meeting (2014), page 2.

ICRC's findings moreover comply with the US' definition as stated in its Department of Defense Directive 3000.09⁹² (DOD). According to the DOD, an autonomous weapon system is:

“a weapon system that, once activated, can select and engage targets without further intervention by a human operator. This includes human-supervised autonomous weapon systems that are designed to allow human operators to override operations of the weapon system, but can select and engage targets without further human input after activation”,⁹³ and that AWS “shall be designed to allow commanders and operators to exercise appropriate levels of human judgment over the use of force.”⁹⁴

In its Joint Doctrine Note (JDN), the UK goes a lot further in explaining the special features making the system autonomous. It describes AWS as:

“capable of understanding higher level intent and directions. From this understanding and perception of the environment, such a system is able to take appropriate action to bring about a desired state. It is capable of deciding a course of action, from a number of alternatives, without depending on human oversight and control, although these may still be present. Although the overall activity of an autonomous unmanned aircraft will be predictable, individual action may not be.”⁹⁵

I have chosen to rely on the DOD, as this approach seems to be that most relied upon by other international actors.⁹⁶ Moreover, the UK approach requires a very high level of situational awareness, which in turn demands that the weapon system is equipped with a high level of artificial intelligence.⁹⁷ As I will show below, such an approach fails to appreciate the different dimensions of autonomy which is characterizing for the DOD definition. Moreover, the actuality of this thesis requires an approach that takes account of existing weapon systems and allows some degree of flexibility as to the dimensions of autonomy.

⁹² Department of Defense Directive, Number 3000.09, November 21, 2012, which is establishing the US Department of Defense's policies on autonomy in weapon systems.

⁹³ DOD, page 13-14.

⁹⁴ DOD, page 2 paragraph 4a.

⁹⁵ Joint Doctrine Note 2/11, *The UK Approach To Unmanned Aircraft Systems*, Ministry of Defence, 30 March 2011.

⁹⁶ Apart from the reference to the ICRC, see for instance Paul A.L. Duscheine, Michael N. Schmitt and Frans P.B. Osinga, *Targeting: The Challenges of Modern Warfare*, (T.M.C. Asser Press, 2016), p. 180.

⁹⁷ See section 2.4.2.

2.4. Dimensions of autonomy

The US largely shapes the prevailing discussion concerning definitional aspects of AWS. Paul Scharre is the name of the man who has both led the DOD working group, and elaborated on technical aspects in relation to AWS in various international forums.⁹⁸ In addition, he works with the *Project on Ethical Autonomy* which has presented several papers concerning AWS.⁹⁹

In the following, I will use Scharre's approach to the different levels of autonomy together with Human Rights Watch' emphasis on the operator's position in "the loop."¹⁰⁰

2.4.1. The loop

The first dimension refers to the position that the human has in "the loop", otherwise explained as the relationship between the human and the unmanned vehicle.¹⁰¹ There are three categories, depending on whether the human is "in the loop", "on the loop" or "out of the loop".

If the human is in the loop/semi-autonomous, the unmanned vehicle uses autonomy to engage individual targets or specific groups of targets that the human has chosen on forehand.¹⁰² Semi-AWS are not identifiable with drones, as they are not directly controlled throughout the operation but rather act autonomously in accordance with the instructions from the operator.¹⁰³ The DOD defines semi-autonomous weapon systems 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."¹⁰⁴ Examples of such weapons are guided munitions,

⁹⁸ Scharre's presentation CCW (2015) and contributed with the proceeding *Technological developments: where do we stand? What might the future look like?* at the International Institute of Humanitarian Law's, 37th Round Table on Current Issues of International Humanitarian Law in Sanremo, 2014, see Greppi, E. (2015). *Conduct of hostilities: the practice, the law and the future*. Milano: F. Angeli, page 200.

⁹⁹ Scharre, P. and Horowitz, M. (2015), *Introduction to Autonomy in Weapon Systems*, Center for a New American Security.

¹⁰⁰ HRW, *Losing Humanity*, p. 2.

¹⁰¹ Scharre, P. and Horowitz, M. (2015), p. 6.

¹⁰² Scharre, P. and Horowitz, M. (2015), p. 8; HRW: *Losing Humanity*, page 2.

¹⁰³ Scharre, P. and Horowitz, M. (2015), p. 6.

¹⁰⁴ DOD, page 14

which are projectiles, bombs, missiles, torpedoes and other weapons that are capable of homing onto their targets after being fired, released or launched.¹⁰⁵

In the next category, a human on the loop supervises the weapon system. A human-supervised AWS has the ability to select targets and deliver force without human intervention, but its operator can terminate the engagement.¹⁰⁶ Thus, the operator can intervene in case of system failure and prevent unintended damage. Today, this category is only used for defensive operations where the reaction time is too short for an operator to be in the loop.¹⁰⁷ Thus, contrary to semi-AWS, it is the machine who takes the decision to engage the target and not the operator.

If the human is out of the loop, the weapon is a so-called fully autonomous weapon system (FAWS) intended to select targets and deliver force without human intervention.¹⁰⁸ What is decisive here is that the weapon system uses autonomy "to engage general classes of targets in a broad geographic area according to pre-programmed rules, and human controllers are not aware of the specific targets being engaged."¹⁰⁹

The international controversy points to a large extent at the development and potential use of FAWS. One fear is that – since there is no human in or on the loop – humans will lose control over the machines' decisions. Another question is, however, to what extent militaries are prepared to delegate their control over battlefield decisions to machines.¹¹⁰ I will not go into that issue in the following discussion.

2.4.2. Complexity of the machine: is it automated, autonomous or intelligent?

The second dimension refers to the complexity, or intelligence, of the weapon system. The point is that the critical functions within the weapon system must be classified as either automated or autonomous. Only in the latter case can the weapon be regarded as an AWS.

¹⁰⁵ Scharre, P. and Horowitz, M. (2015), p. 8.

¹⁰⁶ Ibid.; HRW: *Losing Humanity*, page 2.

¹⁰⁷ Scharre, P. and Horowitz, M. (2015), p. 12.

¹⁰⁸ HRW: *Losing Humanity*, page 2.

¹⁰⁹ Scharre, P. and Horowitz, M. (2015), p. 13.

¹¹⁰ Roff, H. M. (2014), p. 221.

However, according to Scharre and Horowitz, there are no clear boundaries between the existing degrees of complexity,¹¹¹ but the answer to this depends on whom you ask.

For instance, according to the UK Approach to Unmanned Aircraft Systems, a weapon system is automatic when it “is programmed to logically follow a pre-defined set of rules in order to provide an outcome.”¹¹² Furthermore, the UK Approach states that a system does not qualify as autonomous “as long as it can be shown that the system logically follows a set of rules or instructions and is not capable of human levels of situational understanding”.¹¹³ Another difference is that while all the steps during the automatic system’s operation is predictable, individual actions taken by the AWS are not.¹¹⁴

In comparison to the DOD, the UK Approach reflects a rather limited definition of AWS. Whereas the UK demands high levels of perception and understanding, the US seems to acknowledge that a weapon system may be partly automated and partly autonomous; what is decisive in our context is whether the decision to target and engage lies with the human operator or with the machine.

2.4.3. The tasks the weapon system performs

The third – and allegedly most important – dimension is which tasks the AWS is performing. Scharre’s point is that “for each task, we can ask whether for that task the system is semi-autonomous, supervised autonomous or fully autonomous.”¹¹⁵ It is necessary to notice that the system as a whole contains of components with various functions and capacities, whereas the relevant tasks are those of selecting and engaging specific targets.¹¹⁶

Christoph Heyns and the ICRC have a similar approach. In a report, Heyns relies upon the DOD definition of AWS and states that “[t]he important element is that the robot has an autonomous “choice” regarding selection of a target and the use of lethal force.”¹¹⁷ The ICRC

¹¹¹ Scharre, P. and Horowitz, M. (2015), p. 6.

¹¹² JDN, paragraph 205.

¹¹³ JDN. paragraph 206b.

¹¹⁴ JDN paragraph 205.

¹¹⁵ Paul Scharre, CCW Presentation (2015), page 1.

¹¹⁶ Scharre, P. and Horowitz, M. (2015), page 8.

¹¹⁷ Report of the Special Rapporteur on extrajudicial, summary of arbitrary executions, Christof Heyns, A/HRC/23/47, April 2013, page 8 paragraph 38

went a little further when describing this "choice", and stated that an AWS "can independently select and attack targets, i.e. with autonomy in the "critical functions" of acquiring, tracking, selecting and attacking targets."¹¹⁸

According to Dahl, current weapon systems can in fact choose between objects due to image processing capabilities that enable them to compare, for instance, infrared images with images of the target that have been downloaded to the missiles library.¹¹⁹ However, they cannot discriminate in accordance with IHL, nor do they have battlefield awareness or reason in order to make proportionate decisions.¹²⁰

Thus, there is an on-going discussion as to whether such a capability makes a weapon system autonomous. Guiding missiles are one example, as some argue that they operate without supervision due to their capability to independently select and engage their targets once they are launched. For instance, the UK Brimstone missile is able to “distinguish amongst tanks and cars and buses without human assistance, and can hunt targets in a predesignated region without oversight.”¹²¹ However, as the operator identifies the target before launching the missile, the very decision of engagement does in fact lie with him/her. One may argue, then, that these missiles fall within the category of semi-autonomous weapon systems in the loop,¹²² rather than being human-supervised or fully autonomous, taking the decision to engage on their own.

2.5. Autonomy in current weapon systems

As mentioned in section 1.1, robotic features have been in use since the Second World War, and are essential for modern militaries. Current weapon systems have a human in or on the loop, and include functions with various degrees of autonomy or automation and rely on pre-programming rather than artificial intelligence. FAWS do arguably not yet exist, although Scharre and Horowitz mention some examples of weapon systems with fully autonomous functions. In the following sections, I will briefly examine existing weapon systems with various degrees of autonomy. I have divided them into defensive and offensive weapon

¹¹⁸ Report of the ICRC Meeting (2014), page 1.

¹¹⁹ Dahl, A. W., (2013), *Attacks in Air and Missile Warfare*, Israel Yearbook on Human Rights, p. 255.

¹²⁰ Sharkey N. E., *Drones proliferation and protection of civilians*. In G.L. Beruto, ed. *International Humanitarian Law and New Weapon Technologies*. Milan: FrancoAngeli, p. 108.

¹²¹ The New York Times, *Fearing Bombs That Can Pick Whom To Kill*, November 11, 2014

¹²² Scharre, P. and Horowitz, M. (2015), page 8.

systems, meaning that each section might contain examples of aerial-, naval- and ground systems.

2.5.1. Offensive weapon systems with autonomy

Military aerial robotics currently in use are mainly drones like the US' MQ-I Predator and MQ-9 Reaper.¹²³ These are used for both surveillance and armed engagement, which enables their operators – whom are in the loop – to identify, target and attack adversaries from a safe distance. Although controversial, the international community generally accepts that IHL does not prohibit the use of such weapon systems.¹²⁴ A supporting factor in this regard is that UCAVs are included in the provision entitling military aircrafts "to engage in attacks" in the Manual on International Law Applicable to Air and Missile Warfare (HPCR Manual).¹²⁵ According to the Commentary on the HPCR Manual (HPCR Commentary), UCAVs can be both remotely piloted and act autonomously. Hence, the HPCR Manual also acknowledges the existence of AWS and that such weapons can "engage in attacks as long as they qualify as military aircraft." The HPCR Commentary requires, however, that the "sensors and computer programs must be able to distinguish between military objectives and civilian objects, as well as between civilians and combatants."¹²⁶

Although the UCAVs in use are currently remotely controlled, progressing technology enables them to perform increasingly autonomous functions. One example is the British BAE Systems' combat drone prototype Taranis, which is – under the control of a human operator – "capable of undertaking sustained surveillance, marking targets, gathering intelligence, deterring adversaries and carrying out strikes in hostile territory."¹²⁷ However, BAE Systems has – in partnership with QinetiQ Unmanned Services¹²⁸ – equipped Taranis with full autonomous elements as well. Although BAE Systems does not explain which elements are autonomous, QinetiQ writes on its homepage that "[it] is a leading team, in collaboration with BAE Systems [...] to develop a world-leading decision support system that allows UAVs to

¹²³ US Air Force, *MQ-9 Reaper*, Official United States Air Force Website (September 23, 2015).

¹²⁴ ICRC, *The use of armed drones must comply with laws* (interview with Peter Maurer, 10 May 2013), see link: <https://www.icrc.org/eng/resources/documents/interview/2013/05-10-drone-weapons-ihl.htm> (last entered 12 November 2015).

¹²⁵ HPCR Manual (2009), Section D Article 17(a).

¹²⁶ Commentary on the HPCR Manual (2010), section II 17(a)(3), page 100.

¹²⁷ BAESystems.com, *Taranis*.

¹²⁸ A company specialized in unmanned services, see www.qinetiq.com (last entered May 2, 2016).

conduct some routine tasks autonomously – allowing the pilot to focus on higher level mission priorities."¹²⁹ Other, non-critical functions are performed by the Northrop Grumman's fighter-size drone X-47B; it is the first autonomous unmanned aircraft to carry out carrier-based launches and landings, and conduct Autonomous Aerial Refueling of another unmanned aircraft.¹³⁰ According to Human Rights Watch, the X-47B prototype does not carry weapons. It is, however, designed for eventual combat purposes.¹³¹

Self-guided missiles¹³² are another example of weapon systems which have undergone significant technical advancement.¹³³ With the Naval Strike Missile (NSM), Norway has developed what the Norwegian company Kongsberg Defence & Aerospace (KDA) calls "the only 5th generation¹³⁴ long range precision strike missile in existence as per today".¹³⁵ According to the description of the NSM, the missile is equipped with "Autonomous Target Recognition," which "ensures that the correct target is detected, recognized and hit."¹³⁶ The Joint Strike Missile (JSM) is developed on the basis of NSM, and is supposed to be integrated with the F-35 fighter jet.

Loitering missiles are another type similar to the self-guided missiles. However, they differ in important aspects, as the former is able to loiter for long hours and cover a larger geographical area.¹³⁷ This difference enabled the military to use loitering missiles in operations without a specific target or a specific target location.¹³⁸ An example of a loitering munition is Israeli Aerospace Industries' Harpy, an AWS designed to detect, attack and destroy radar emitters. According to Israeli Aerospace Industries (IAI), the Harpy is a "Fire and Forget" autonomous weapon that hits the emitters with high hit accuracy and is able to

¹²⁹ Qinetiq.com, *Autonomous aircraft systems programme completes key trial*, December 13, 2012.

¹³⁰ Northropgrumman.com, *X-47B makes Aviation History...Again!*

¹³¹ HRW: *Losing Humanity*, page 16.

¹³² Missiles are "self-propelled unmanned weapons – launched from aircraft, warships or land-based launchers – that are either guided or ballistic", see HPCR Manual Section A Article 1(z).

¹³³ International Affairs 91:4, 2015: Michael Mayer, *The new killer drones: understanding the strategic implications of next-generation unmanned combat aerial vehicles* (The Royal Institute of International Affairs), page 772.

¹³⁴ Meaning that the missile fits to the 5th generation fighter jet Lockheed Martin F-35 Lightning II, see link: <http://www.lockheedmartin.com/us/news/features/2014/f35-setting-the-bar-for-5th-gen-fighters.html> (last entered 17 November 2015).

¹³⁵ Kongsberg.com, *Naval Strike Missile*.

¹³⁶ Ibid.

¹³⁷ Scharre, P. and Horowitz, M. (2015), page 14.

¹³⁸ Ibid.

loiter for many hours.¹³⁹ IAI has developed several loitering munitions, whereas Harpy is apparently the only one without a man in the loop.¹⁴⁰ In fact, the Harpy is allegedly the only fully AWS in current use.¹⁴¹

SWARM technology refers to a group of AWS in which each individual aircraft is able to coordinate its moves with the others in a fixed pattern. The US is in front in developing this type of weapon system through its LOCUST program.¹⁴² According to the US Navy, their new system is able to "launch swarming UAVs to autonomously overwhelm an adversary" and is able to utilize "information sharing between the UAVs, enabling autonomous collaborative behavior in either defensive or offensive missions."¹⁴³ Although autonomous, the US Navy ensures that "there will always be a human monitoring the mission, able to step in and take control as desired."¹⁴⁴

2.5.2. Artificial deep-learning and ethical governing

In order to be fully autonomous and act without any human interference, the machine would necessarily need some sort of intelligence.¹⁴⁵ In machines, intelligence is artificial. According to Singer, artificial intelligence (AI) makes the machine able to perceive and make use of complex information in order to achieve a certain task that requires decision-making.¹⁴⁶

Today, scientists are "converging complex 'high-level planning' computer algorithms," which enables "computerized systems to increasingly make independent decisions and perform independent actions." One type of AI is self-educating, and goes by the term "deep-learning AI". Deep-learning AI software mimics the human brain¹⁴⁷ by using layers in a neural network. These layers analyze data concerning a certain scenario by first breaking down the information into constituent parts. Then, the machine activates one layer at the time in order

¹³⁹ Israeli Aerospace Industries, *Harpy loitering Weapon*, IAI's official webpage, last entered March 31, 2016.

¹⁴⁰ See for instance Harop, Green Dragon and Rotem L at http://www.iai.co.il/2013/36694-46079-en/Business_Areas_Land.aspx.

¹⁴¹ Scharre, P. and Horowitz, M. (2015), page 13.

¹⁴² Low-Cost UAV Swarming Technology.

¹⁴³ David Smalley, *LOCUST: Autonomous, Swarming UAVs Flying into the Future*, Official Webpage of the United States Navy, April 14, 2015.

¹⁴⁴ *Ibid.*

¹⁴⁵ The "ability to act appropriately (or make an appropriate choice or decision) in an uncertain environment", see Singer (2009), p. 75.

¹⁴⁶ Singer (2009), p. 77.

¹⁴⁷ *Ibid.*

to build up a final understanding.¹⁴⁸ Each layer uses the earlier perception to interpret the scenario in question a bit further. In the end of the perception process, the neural network has gained understanding and a basis for its final decision. With the right algorithms, these neural networks can be trained and taught to recognize a subject or scenario. This feature is essential for the robot's ability to adapt to changes in their environment and perceive an impression of the reality it works in.¹⁴⁹

In order to make FAWS able to comply with legal standards, roboticist Ronald Arkin has designed a feature he calls an “ethical governor.”¹⁵⁰ The ethical governor requires the weapon system to use binary yes-or-no answers to evaluate gathered intelligence and analyze whether IHL prohibits an attack under the current circumstances. Non-compliance will force the FAWS to abort the attack.¹⁵¹ Second, if the attack is a “yes”, the FAWS has to evaluate whether the attack will be proportionate or not. The calculation will use an algorithm that “combines statistical data with ‘incoming perceptual information’ to evaluate the proposed strike ‘in a utilitarian manner.’”¹⁵² In order to fire, the FAWS has to conclude that the attack is both ethical and proportionate.¹⁵³

2.5.3. Meaningful human control as a key requirement

To the extent that AWS are not capable of complying with the relevant rules without human monitoring, lawful use of means and methods of warfare requires the conduct to be under human control. Since there are not many states that have made guidelines as to how to use AWS, the discussion is necessarily based on the fundamental principles and existing sources that support the one or the other view. Due to existing AWS’ limited situational awareness, compliance with IHL requires that a human operator has some sort of control over the targeting process.¹⁵⁴ One may argue on this ground that states are obliged to ensure that operators exercise meaningful human control over the AWS.

¹⁴⁸ The Verge, *What counts as artificially intelligent? AI and deep learning, explained*, February 29, 2016.

¹⁴⁹ Singer, p. 77.

¹⁵⁰ HRW: *Losing Humanity*, p. 27.

¹⁵¹ *Ibid.*

¹⁵² HRW: *Losing Humanity*, p. 28.

¹⁵³ *Ibid.*

¹⁵⁴ See chapter 4.

The US has taken such an approach. According to DOD, the US policy is that AWS “shall be designed to allow commanders and operators to exercise appropriate levels of human judgment over the use of force.”¹⁵⁵ The level of control must enable the commander or operator to make “informed and appropriate decisions in engaging targets.”¹⁵⁶ Second, the interface has to be readily understandable to trained operators.¹⁵⁷ Finally, persons who authorize or direct the use of AWS and operate them in the field are obliged to do so “with appropriate care” and in accordance with IHL and the rules of engagement.¹⁵⁸

The determinative factor is whether the operator is able to consider consciously the potential target and, if the weapon is human supervised, whether or not to abort the mission due to insufficient background information and data.¹⁵⁹ The interface is an important asset in this regard, and so is the training of the operator and the testing and design of the AWS.¹⁶⁰ Thus, whether the use is compliant with the directive relies on the loop and the relationship between operator and machine.

2.6. Preliminary conclusion

States develop and use more sophisticated and autonomous weapon systems in a steadily growing pace. Current offensive AWS have a human in or on the loop, which seems to be a minimum demand as existing AWS will not be able to comply with IHL without meaningful human control. However, the on-going development of “ground-breaking” computer software and artificial intelligence “have lead some experts to conclude that it is technologically feasible today to design a fully autonomous weapon system.”¹⁶¹ Whether the scientific advancement should progress in such a manner is a core issue in the current international discussion: Some argue that weapons equipped with strong AI may lead to less destruction, and even aid people in the fight against terrorism.¹⁶² Others are scared that such weapon

¹⁵⁵ DOD (2012), p. 2 para 4a.

¹⁵⁶ DOD (2012), para 4a(3).

¹⁵⁷ DOD (2012), para 4a(3)(a).

¹⁵⁸ DOD (2012), para 4b.

¹⁵⁹ Horowitz M. C. and Scharre, P. (2015), *Meaningful Human Control in Weapon Systems: A Primer*, Center for New American Security, p. 4.

¹⁶⁰ Ibid.

¹⁶¹ Thurnher, J. (2016), p. 182.

¹⁶² McGinnis, *Accelerating AI*, Northwestern University Law Review (2010), p. 4.

systems will become unpredictable and uncontrollable in regard of which decisions it takes.¹⁶³ However, the usefulness of AI is evident in warfare, as it will enable machines to be less independent on human monitoring. This comes to show due to the plans of the US military¹⁶⁴ and the eagerness of other states¹⁶⁵ to invest in both AWS and AI.

One should have in mind that those who promote a ban seems to aim at FAWS, not AWS that are under meaningful human control. Such a control is currently a demand in order to use AWS in accordance with IHL and the relevant IHRL.

¹⁶³ Anderson, K., Reisner D. and Waxman M. (2014), *Adapting the Law of Armed Conflict to Autonomous Weapon Systems*, International Law Studies, U.S. Naval War College (90 Int'l L. Stud. 386 (2014)), p. 394.

¹⁶⁴ Reuters, *Pentagon Eyes \$12-15 billion for early work on new technologies*, December 14, 2015.

¹⁶⁵ Thurnher, J. (2016), p. 182.

3. The impact of human rights law when states use autonomous weapon systems in international armed conflicts

In addition to IHL, which directly regulates the conduct of hostilities,¹⁶⁶ IHRL deriving from treaties or customary law may have a direct or indirect limiting impact on military operations.¹⁶⁷ Due to the nature of weapon systems – namely that they are designed to cause death or immense destruction – the rules that most likely will be applicable to states' use of AWS, are the above mentioned right to life¹⁶⁸ and the prohibition against ill-treatment.¹⁶⁹ In comparison with many other human rights, these rules are in a special position:¹⁷⁰ the right not to be ill-treated is considered *jus cogens* and is already covered by IHL provisions.¹⁷¹ Furthermore, the right to life is in principle non-derogable, except from where a death results from a use of force which is lawful under IHL.¹⁷² The applicability of IHRL during IACs is, however, controversial.

3.1. The standing of international human rights law in international armed conflicts

Whereas IHRL and national law are the main bodies of law applicable during peacetime,¹⁷³ states are obliged to comply with relevant and applicable obligations under both IHRL and IHL during IACs.¹⁷⁴ There are, however, neither an exact definition of human rights nor an international consensus as regards their role in international law.¹⁷⁵ The High Commissioner for Human Rights in the United Nations describes human rights as

“rights inherent to all human beings, whatever our nationality, place of residence, sex, national or ethnic origin, color, religion, language, or any other status [...] International

¹⁶⁶ See chapter 4.

¹⁶⁷ Corn, G. et al. (2012), *The Law of Armed Conflict: An Operational Approach*. New York: Wolters Kluwer Law & Business, p. 51-52.

¹⁶⁸ ECHR Article 2 and ICCPR Article 6.

¹⁶⁹ ECHR Article 3 and ICCPR Article 7.

¹⁷⁰ Corn (2012), p. 52.

¹⁷¹ See for instance GC IV Article 32, which prohibits, *inter alia*, torture and “other measures of brutality”.

¹⁷² See section 3.2.2.

¹⁷³ Common Article 1 in the GCs obliges the contracting parties “to respect and to ensure respect” of the conventions “in all circumstances.” Hence, although most of the provisions set out in the GCs are meant for the regulation of conduct during armed conflict, some rules of IHL must be implemented in peacetime as well. One example of a provision of IHL applicable in peacetime is API Article 36, which I will examine in section 4.1.

¹⁷⁴ *Case Concerning Armed Activities in the Territory of the Congo* (DCR v. Uganda), Judgment of 19 December 2005, para 178ff.

¹⁷⁵ Shaw, M. N. (2014), page 194.

human rights law obliges states to act in certain ways or to refrain from certain acts, in order to promote and protect human rights and fundamental freedoms of individuals or groups.”¹⁷⁶

Although such descriptions are only indicative, the significance of IHRL in the international order is nevertheless evident: There are now numerous human rights treaties – both global and regional¹⁷⁷ – and some of the rules have achieved status as customary international law.¹⁷⁸

The cornerstone of modern IHRL was laid in 1948, when the UN General Assembly adopted the Universal Declaration of Human Rights (the Declaration on Human Rights).¹⁷⁹ Although this is only a political document without legally binding effect, it is considered to be "of great importance in stimulating and directing the international promotion of human rights."¹⁸⁰ For instance, in the preamble, the Declaration on Human Rights expresses the importance of human rights by stating that “the inherent dignity and [...] the equal and inalienable rights of all members of the human family is the foundation of freedom, justice and peace in the world.”¹⁸¹ Furthermore, the preamble holds that “Member States have pledged themselves to achieve [...] the promotion of universal respect for and observance of human rights and fundamental freedoms” and stresses that “a common understanding of these rights and freedoms is of the greatest importance for the full realization of this pledge.” According to the UN itself, the Declaration on Human Rights "is generally agreed to be the foundation of international human rights law."¹⁸²

Other prominent – and legally binding – human rights instruments reflect the above-mentioned assertion. For instance, the parties to ECHR considered that "this Declaration aims at securing the universal and effective recognition and observance of the Rights therein declared.”¹⁸³ Moreover, the ICCPR is founded upon ideals that are in accordance with the

¹⁷⁶ Ohchr.org, *What are human rights?* <http://www.ohchr.org/EN/Issues/Pages/WhatareHumanRights.aspx> (last entered May 2, 2016).

¹⁷⁷ The ECHR; the American Convention on Human Rights of 22 November 1969; the African Charter on Human and People's Rights of 27 June 1981; the Arab Charter on Human Rights of 15 September 1994.

¹⁷⁸ For instance article 4 and 5, which prohibits slavery and torture, see Shaw, M.N (2014), page 201.

¹⁷⁹ Universal Declaration on Human Rights, General Assembly resolution 21 A, enacted 10 December 1948, first paragraph.

¹⁸⁰ Fleck, D. (2013), p. 73.

¹⁸¹ Preamble of the UDHR, 1st passage.

¹⁸² UN.org, *The Foundation of International Human Rights Law*. <http://www.un.org/en/sections/universal-declaration/foundation-international-human-rights-law/index.html> (last entered May 2, 2016).

¹⁸³ Preamble of the ECHR, 3rd passage.

Declaration on Human Rights. According to the preamble, the parties to the ICCPR recognizes that:

“[T]he ideal of free human beings enjoying civil and political freedom and freedom from fear and want can only be achieved if conditions are created whereby everyone may enjoy his civil and political rights, as well as his economic, social and cultural rights.”¹⁸⁴

The application of IHRL is different under the "law enforcement" from the "armed conflict" paradigm. IHL and IHRL have different points of departure due to the situations they are specially designed to govern; as the nature of armed conflicts brings with it complex and uncertain situations where it is arguably impossible to apply the rigorous human rights regime similarly as in peacetime.¹⁸⁵ Thus, although IHRL mitigate the potential harm done to individuals to some extent, effective warfare requires militaries to be allowed a wide “margin of discretion” in respect of their decisions and operations.¹⁸⁶ If IHRL is implemented into the IHL regime to a larger extent than what is appropriate in the context of armed conflict, the consequence may be that IHL, and for that sake IHRL, lose impact on state conduct.

3.1.1. The inter-relationship between international human rights and international humanitarian law

In earlier years, human rights were considered immaterial in case of an armed conflict. This perception has changed as the international legal community gradually has accepted the applicability of human rights during an armed conflict.

In the *Nuclear Weapons* case, the ICJ concluded that the ICCPR Article 6, which prohibit ‘arbitrary’ deprivation of life “does not cease in times of war.”¹⁸⁷ The ICJ rather concluded that whether a deprivation of life is ‘arbitrary’ or not in an armed conflict “falls to be determined by the applicable *lex specialis*, namely, the law applicable in armed conflict which is designed to regulate the conduct of hostilities.”¹⁸⁸

¹⁸⁴ Preamble of the ICCPR, 4th passage.

¹⁸⁵ Ben-Naftali (2011), p. 28-29.

¹⁸⁶ Ben-Naftali (2011), p. 29.

¹⁸⁷ *The Legality of the Threat or Use of Nuclear Weapons*, Advisory Opinion of 8 July 1996, paragraph 25.

¹⁸⁸ *Nuclear Weapons* case, paragraph 25.

The ICJ reaffirmed this contention in the Advisory Opinion on the *Legal Consequences of the Construction of a Wall in the Occupied Palestinian Territory*, and furthermore stated that:

“[S]ome rights may be exclusively matters of international humanitarian law; others may be exclusively matters of human rights law; yet others may be matters of both these branches of international law, namely human rights law and, as *lex specialis*, international humanitarian law.”¹⁸⁹

The ICJ followed its own precedence in the *Armed Activities* judgment concerning Uganda's armed activities on the territory of Congo, where it listed up the binding obligations between the parties without emphasizing one branch of law over the other.¹⁹⁰ As Boothby put it: “[T]he ICJ appeared to characterize the two bodies of law as complementary in nature”.¹⁹¹ This interpretation corresponds with the standing of the HRC, who has confirmed that “both spheres of law are complementary, not mutually exclusive.”¹⁹²

Application of the *lex specialis* principle implies that where IHRL and IHL norms conflict, one may choose to apply the norm which is especially designed to regulate the matter in question.¹⁹³ Thus, the question is which legal norm that most precisely addresses the issue in each specific case.¹⁹⁴ In order to identify the relevant *lex specialis*, one may take into account the rules which are “more straight to the point; regulate the issue more effectively; and are more capable to accommodate particular circumstances.”¹⁹⁵ However, one may “seek to produce an outcome that harmonizes the two norms as far as possible” and thus avoid excluding the other norm in the interpretation process.¹⁹⁶

The inter-relationship between human rights and international humanitarian law develops continuously. According to VCLT article 31(3)(b), a treaty shall be interpreted with account

¹⁸⁹ Advisory Opinion on the *Legality of the Construction of a Wall in the Occupied Palestinian Territory*, 9 July 2004, paragraph 106.

¹⁹⁰ *Armed Activities* case, para 217 and 219.

¹⁹¹ Boothby (2014), p. 332.

¹⁹² Human Rights Committee, General Comment No. 31 (80), *The Nature of the General Legal Obligation Imposed on States Parties to the Covenant*, UN Doc. CCPR/C/21/Rev.1/Add.13, 26 May 2004, § 11.

¹⁹³ General Comment No. 31 (80), § 11; Magne Frostad, *The Responsibility of Sending States for Human Rights Violations during Peace Support Operations and the Issue of Detention*, p.158.

¹⁹⁴ Ben-Naftali (2011), p. 214.

¹⁹⁵ Frostad, M., p.158.

¹⁹⁶ Boothby (2014), p. 327.

taken to "any subsequent practice in the application of the treaty which establishes the agreement of the parties regarding its interpretation." It is also a general principle of treaty interpretation that "any relevant rules of international law applicable in the relations between the parties" must be taken into account.¹⁹⁷ Thus, the current inter-relationship affects the interpretation of both IHL and IHRL-treaties in armed conflict.

The development of the inter-relationship is especially apparent in relation to the ECHR, where the ECtHR approaches the provisions dynamically and is obliged to include other sources of international law in its interpretation. According to *Bankovic*, the underlying principles "cannot be interpreted and applied in a vacuum,"¹⁹⁸ although the Court "must remain mindful of the Convention's special character as a human rights treaty."¹⁹⁹

In *Hassan*, the ECtHR started its examination by listing the above-mentioned case law concerning the inter-relationship between IHL and IHRL.²⁰⁰ By following ICJ's approach, the Court concluded that the safeguards under the Convention continued to apply, "albeit interpreted against the background of the provisions of [IHL]."²⁰¹

Subsequently, it concluded that:

"[D]eprivation of liberty pursuant to powers under IHL must be lawful to preclude a violation of article 5 § 1. This means that the detention must comply with the rules of IHL, and, most importantly, that it should be in keeping with the fundamental purpose of Article 5 § 1, which is to protect the person from arbitrariness."²⁰²

Thus, although *Hassan* concerned a potential violation of ECHR Article 5, the dictum is arguably generally applicable in the sense that the act or omission attributable to a contracting state "should be in keeping with the fundamental purpose" of the human right in question.

¹⁹⁷ VCLT article 31(3)(c).

¹⁹⁸ *Bankovic and Others v. Belgium and Others*, Decision, App. No. 52207/99, 12 December 2001, para 57.

¹⁹⁹ *Bankovic*, para 57.

²⁰⁰ *Hassan v. the United Kingdom*, Judgment (Merits), App. No. 29750/09, 16 September 2014, paras. 35-37.

²⁰¹ The *Hassan* case, para 104.

²⁰² The *Hassan* case, para 105.

The question concerning the right to life in armed conflict must be solved in accordance with the method used in the *Nuclear Weapons* case and the *Hassan* case. For instance, where a death has resulted from the use of an AWS, the first question is whether IHL or IHRL is *lex specialis* under the present circumstances. For instance, if the AWS kills a civilian and the killing is not linked to an IAC, the above-mentioned approach may result in IHRL being *lex specialis*. If, however, the AWS is programmed or operated by someone who has reasonable grounds to believe that the civilian in question is directly participating in the IAC, IHL will presumably be regarded as *lex specialis*. This may be an additional argument for the notion that AWS must have a human in or on the loop to whom the decision to attack or not to intervene in the attack can be attributed.

3.1.2. Jurisdiction

Several conditions must be fulfilled in order to establish that a human rights treaty applies on a specific matter. First, it has to fall within the protection of the particular right. Second, the state in question must have ratified the convention at the time of the violation of a right. Thirdly, the right must protect the victim of a violation and the act in question must be attributable to a state agent acting on behalf of the state in question, and not to, for instance, another state, the UN or NATO.²⁰³

Finally, application of human rights requires that the event or action takes place “within the jurisdiction” of a state which is a party to the convention.²⁰⁴ In general, jurisdiction is a “necessary condition for a Contracting State to be able to be held responsible for acts or omissions imputable to it” that activates the human rights obligation in question.²⁰⁵

Traditionally, jurisdiction implied that the action took place on the territory of the contracting state. However, the international courts have taken a dynamic approach when assessing actions performed by contracting parties in other states, and have expanded the scope of application of human rights so that they, in certain circumstances, cover acts on other territories than that of the contracting state itself. This development has the strongest impact

²⁰³ *Behrami and Behrami v. France and Saramati v. France, Germany and Norway*, Decision, App. Nos. 71412/01 and 78166/01, May 2, 2007, para 151.

²⁰⁴ ECHR Article 1.

²⁰⁵ *Jaloud v. the Netherlands*, Case Reports, App. No. 47708/08, 20 January 2014, para. 130.

on the ECHR system, although the issue of extraterritorial jurisdiction may arise under all treaties.²⁰⁶

A common denominator in cases where human rights obligations have applied extraterritorially has been that agents representing the contracting state have had some kind of physical appearance, either through belligerent occupation or through direct physical control over the individual. Due to the technological development, states become gradually more able to conduct unmanned acts of warfare over large distances. The concern is that a legal vacuum may occur when states become increasingly capable of using lethal force or conduct ill-treatment without such physical appearance. As armed conflicts often occur outside the territory of the perpetrating state and it is likely that AWS will be deployed extraterritorially, a question is whether and to what extent human rights apply in such a scenario.

3.1.2.1. *Extraterritorial application of the ICCPR*

According to Article 2(1) of the ICCPR, the contracting parties undertake to respect and ensure the rights in the Covenant "to all individuals within its territory and subject to its jurisdiction."

The language indicates that the provision must be understood as covering only individuals who are both present within the territory of a contracting party and subject to its jurisdiction.²⁰⁷ However, a second way of interpretation suggests that the protection offered by the ICCPR covers both individuals present within a state's territory *and* those outside that territory, but nevertheless subject to that state's jurisdiction.²⁰⁸ In *Burgos Lopez v Uruguay*, the HRC held that the ICCPR applied extraterritorially, as:

"[I]t would be unconscionable to so interpret the responsibility under article 2 of the Covenant as to permit a State party to perpetrate violations of the Covenant on the territory of another State, which violations it could not perpetrate on its own territory."²⁰⁹

²⁰⁶ Ben-Naftali (2011), p. 65.

²⁰⁷ Fleck (2013), p. 75; *The Wall* case para 108; Ben-Naftali (2011), p. 63.

²⁰⁸ *The Wall* case, para 108.

²⁰⁹ *Sergio Euben Lopez Burgos v. Uruguay*, Communication No. R.12/52, U.N. Doc. Supp. No. 40 (A/36/40) at 176 (1981), para 12.3.

However, the ICJ has recognized that jurisdiction under the ICCPR, although primarily territorial, can “sometimes be exercised outside the national territory.”²¹⁰ This is due to the ICCPR’s object and purpose, the constant practice of the Human Rights Committee and the *travaux préparatoires*.²¹¹ For instance, the HRC has held that Article 2(1) obliges state parties to respect and ensure the rights laid down in ICCPR to “those within the power or effective control of the forces of a State Party acting outside its territory, regardless of the circumstances in which such power or effective control was obtained”.²¹² Moreover, according to the preparatory papers, “a State should not be relieved of its obligations under the covenant to persons who remained within its jurisdiction merely because they were not within its territory.”²¹³ Consequently, the ICJ concluded that the ICCPR was “applicable in respect of acts done by a State in the exercise of its jurisdiction outside its own territory.”²¹⁴

3.1.2.2. Extraterritorial application of the ECHR

The ECtHR has developed certain requirements that must be met before the ECHR applies extraterritorially.²¹⁵ In *Al-Skeini and others v the UK* the ECtHR scrutinized the matter. After recalling that “[a] State’s jurisdictional competence under Article 1 is primarily territorial”, the Court re-stated the extraterritoriality doctrine²¹⁶ by admitting that, in exceptional circumstances and with reference to the particular facts in each case,²¹⁷ “acts of the Contracting States performed, or producing effects, outside their territories can constitute an exercise of jurisdiction within the meaning of Article 1.”²¹⁸

Thus, the question is whether military operations conducted with an AWS may amount to an exercise of extraterritorial jurisdiction.

²¹⁰ *The Wall* case, para. 109.

²¹¹ *The Wall* case, para. 109.

²¹² HRC General Comment no. 31 (2004) § 10.

²¹³ *Official Records of the General Assembly*, Tenth Session, Annexes, A2929, Part II, Chap. V, para. 4 (1955).

²¹⁴ *The Wall* case, para. 111.

²¹⁵ *Al-Skeini and Others v. the United Kingdom*, Case Reports, App. No. 55721/07, 07 July 2011, para. 132; Harris, O’Boyle and Warbrick (2014), p. 99.

²¹⁶ *Ibid.*

²¹⁷ *Al-Skeini v. UK*, para. 132.

²¹⁸ *Al-Skeini v. UK*, para. 131.

There are two exceptions to the principle of territorial jurisdiction.²¹⁹ First, a state may become responsible for acts or omissions by its state agents that produce effects outside its own territory,²²⁰ especially where such agents exercise physical power or control over an individual.²²¹ This notion will hereinafter be referred to as personal jurisdiction.²²²

Secondly, a state can become responsible where, as a consequence of lawful or unlawful military action, it exercises effective control of an area outside its national territory.²²³ The control must be a consequence of lawful or unlawful military action, and either be exercised "directly, through the Contracting State's own armed forces or through a subordinate local administration."²²⁴ When determining whether a contracting state's control over an area amounts to "effective control", one must primarily take into consideration the strength of the state's military presence in the area.²²⁵ However, if the control qualifies and the controlling state uses AWS in military operations, the jurisdictional link arises because of the control over the area and not because of the use of AWS.

Personal jurisdiction is of another character than the geographical jurisdiction, as it solely demands that a state agent controls the individual in question. In *Al-Skeini*, the ECtHR identified three different grounds from which personal jurisdiction may arise.

First, "the acts of diplomatic and consular agents [...] may amount to an exercise of jurisdiction when these agents exert control and authority over others".²²⁶ This ground is not of further interest in the present discussion. Moreover, armed forces may bring an individual within the jurisdiction of a state through the second and the third strands of personal jurisdiction. According to *Al-Skeini*, the ECtHR recognizes that extraterritorial jurisdiction may arise

²¹⁹ See *Jaloud v Netherlands*, para 133-139.

²²⁰ *Al-Skeini v. UK*, para 133.

²²¹ *Al-Skeini v. UK*, para 136; see Casey-Maslen, S. (2014), p. 137.

²²² Milanovic, M. (2011), *European Court Decides Al-Skeini and Al-Jedda*, EJIL: Talk! p. 2.

²²³ *Al-Skeini v. UK*, para 138; *Bankovic*, para 71; *Jaloud v Netherlands*, para 138.

²²⁴ *Al-Skeini v. UK*, para 138.

²²⁵ *Al-Skeini v. UK*, para 139; *Loizidou v. Turkey*, Judgment (merits), App. No. 15318/89, December 18, 1996, para 16 and 56.

²²⁶ *Al-Skeini v. UK*, para 134.

"[...] when, through the consent, invitation or acquiescence of the Government of that territory, it exercises all or some of the public powers normally to be exercised by that Government. [...] Thus, where, in accordance with custom, treaty or other agreement, authorities of the Contracting State carry out executive or judicial functions on the territory of another State, the Contracting State may be responsible for breaches of the Convention thereby incurred, as long as the acts in question are attributable to it rather than the territorial State."²²⁷

This was, for instance, the case in *Al-Skeini*, which concerned the deaths of 6 Iraqi nationals who were in UK's custody during the occupation of Iraq in 2003. The UK, together with the US, exercised powers of government temporarily, especially that of providing security in Iraq, including the maintenance of civil law and order.²²⁸ The ECtHR thus concluded that the UK "exercised authority and control over individuals killed in the course of such security operations, so as to establish a jurisdictional link between the deceased and the [UK] for the purposes of Article 1 of the Convention."²²⁹ Thus, if AWS are used to exercise a public power, like, for instance, targeted killings, this may amount to an exercise of authority and control which establishes extraterritorial jurisdiction.

Finally, state agents operating outside their territory, when these agents use force to bring the individual under the control of their territorial state's authorities, can bring an individual within a contracting state's jurisdiction.²³⁰

This was the case in *Pad v Turkey*. Here, the Court found that a bombing conducted from a helicopter was within Turkey's jurisdiction.²³¹ Thus, the ECtHR departed from its earlier case law in *Bankovic and others*,²³² from which it contended that "sole aerial bombardments carried out by a contracting state outside its territory are insufficient to bring affected persons within [the respective state's] jurisdiction."²³³ Furthermore, in *Andreou v Turkey*, the Court considered the shooting of a woman outside the area where Turkey exercised control as

²²⁷ *Al-Skeini v. UK*, para 135.

²²⁸ *Al-Skeini v. UK*, para 144.

²²⁹ *Al-Skeini v. UK*, para 149.

²³⁰ *Al-Skeini v UK*, para 136; *Issa and Others v. Turkey*, Judgment (Merits), App No. 31821/96, 16 November 2004, para. 71.

²³¹ *Pad and Others v. Turkey*, App. No. 60616/00, 28 June 2007, para 53.

²³² *Bankovic*, para 75.

²³³ Fleck, D. (2013), page 76.

within Turkey's jurisdiction. This was due to the opening of fire from close range, "which had been a direct and immediate cause of her injuries."²³⁴ The cases are interesting as they show that a proven or admitted causality between the use of force and the potential violations of ECHR rights may provide the jurisdictional link that is needed in order to pin responsibility.

In *Al-Skeini*, the ECtHR stated that jurisdiction does not solely arise from the control exercised by contracting states: what is decisive is the actual "exercise of physical power and control over the person in question".²³⁵ The technological development enables AWS to undertake tasks which usually were conducted by persons. Thus, with reference to *Pad* and *Andreou*, one may argue that the ECHR should apply extraterritorially where a programmer or an operator has directed a semi- or human-supervised AWS to attack a specific target. However, this question has not yet been settled authoritatively.

3.2. Does the right to life limit the use of autonomous weapon systems in international armed conflicts?

During an IAC, the protection of the right to life provided solely by IHRL is not attainable as IHL permits states to kill combatants in order to achieve their military objectives. Moreover, civilian casualties as a result of an attack are allowed to the extent that the number of deaths is not excessive.²³⁶ In the planning of and during military operations, the 'fog of war' is an accepted fact allowing a wider margin of error than would be the case in a law enforcement operation. However, IHRL has become, as shown above, a legal branch which militaries must take regard of during hostilities. The issue in the following is not whether IHRL applies, but to which extent it applies and how it harmonizes with IHL and thus provide additional regulations applicable to the use of AWS.

ECHR Article 2 contains the substantive right to life. The provision reads as follows:

²³⁴ *Andreou v. Turkey*, Judgment (Merits and Just Satisfaction), App. No. 45653/99, 27 October 2009, para 25.

²³⁵ *Al-Skeini v. UK*, para 136.

²³⁶ See section 4.4.3.

"Everyone's right to life shall be protected by law. [...].

Deprivation of life shall not be regarded as inflicted in contravention of this Article when it results from the use of force which is no more than absolutely necessary:

- (a) in defence of any person from unlawful violence;
- (b) in order to effect a lawful arrest or to prevent the escape of a person lawfully detained;
- (c) in action lawfully taken for the purpose of quelling a riot or insurrection.”²³⁷

The ECHR’s universal counterpart is the ICCPR Article 6(1), which holds that:

“[e]very human being has the inherent right to life. This right shall be protected by law. No one shall be arbitrarily deprived of his life.”²³⁸

The test is whether a deprivation of life was 'arbitrary', which must be determined individually in each case²³⁹ based on the requirements of 'law'.

3.2.1. The obligation to protect the right to life during international armed conflicts

There are three dimensions of the right to life in both ECHR Article 2 and ICCPR Article 6. First, the provisions contain a negative obligation prohibiting the state from depriving a person from his or her life unless the ‘law’ and the circumstances allow for an exception. ECHR Article 2(2) justifies a death resulting from the use of force by a state agent must be in accordance with IHL or Article 2(2). Similarly, ICCPR Article 6 demands that states take measures “not only to prevent and punish deprivation by criminal acts, but also to prevent arbitrary killing by their own security forces.”²⁴⁰ This includes acts done during an IAC,²⁴¹ although with the reservation that the interpretation may have to take regard of IHL as *lex specialis*.

²³⁷ ECHR Article 2.

²³⁸ ICCPR Article 6(1).

²³⁹ Melzer, N. (2008). *Targeted killing in international law*. Oxford: Oxford University Press, p. 59.

²⁴⁰ *Report of the United Nations Fact Finding Mission on the Gaza Conflict*, 15 september 2009, UN Doc. A/HRC/12/48 (2009) para. 865.

²⁴¹ *Ibid.*

Second, the right to life in both provisions contain a positive obligation to protect individuals from unjustifiable deprivation of life. This means that the lives of the individuals within the contracting state's jurisdiction are protected through effective and practical laws.²⁴² A crucial requirement in this regard is that the legal framework "must strictly control and limit the circumstances in which a person may be deprived of his life".²⁴³ In addition, it has to be "formulated with sufficient precision to enable the citizen to regulate his conduct."²⁴⁴ In the context of IACs, the law must adequately regulate the conduct of hostilities – and presumably the use of AWS – through domestic martial law, rules of engagement and the general law of targeting. Thus, if the law of AWS is not within the IHL framework, this may constitute a violation of the right to life.

In order to ensure compliance with these rules, Article 2 demands that states provide "appropriate training, instructions and briefing to its soldiers [...] and exercise strict control" over, *inter alia*, military operations.²⁴⁵ This includes the regulation of the conduct [...] of persons acting on behalf of the state's armed forces.²⁴⁶ Thus, if programmers or operators are not given proper training and instructions, this may be a breach of the right to life.

Furthermore, ECHR Article 2(1) obliges states to ensure effective and practical protection and take "appropriate steps to safeguard the lives of those within their jurisdiction."²⁴⁷ This means that the contracting states must "grant individuals the legal status, rights and privileges" that are needed in order to secure those within the ECHR's jurisdiction their rights in accordance with Article 1.²⁴⁸ Likewise, in ICCPR Article 6, the positive obligation to protect the right to life includes the duty to "take necessary steps [...] to adopt such laws or other measures as may be necessary to give effect" to it.²⁴⁹ This should include admitting civilians their status as protected persons within the IHL framework and granting lawful combatants their privilege to be considered *hors de combat* when IHL so requires. Thus, the person or AWS that determines an engagement must be able to identify the legal status of the target.

²⁴² *Soering v UK*, para 87.

²⁴³ *McCann and Others v. the United Kingdom*, Judgment (Merits and Just Satisfaction), App. No. 18984/91, September 27, 1995, para 151.

²⁴⁴ *Sunday Times v. the United Kingdom (No 1)*, Judgment (Merits), App. No. 6538/74, April 26, 1978, para 49.

²⁴⁵ *McCann v UK* para 151.

²⁴⁶ According to *Al-Skeini and others v UK* para 136; Harris, O'Boyle and Warbrick (2014), p. 204.

²⁴⁷ *L.C.B. v UK*, Judgment (Merits and Just Satisfaction), App. No. 23413/94, June 9, 1998, para 36.

²⁴⁸ Harris, O'Boyle and Warbrick (2014), p. 22.

²⁴⁹ ICCPR Article 2(2).

In addition to ensure protection through preventive laws, contracting states to the ECHR have to put in place "an appropriate legal and administrative framework to deter the commission of offences against the person, backed up by law enforcement machinery for the prevention, suppression and punishment of breaches of such provisions."²⁵⁰ The ICCPR has a similar obligation, as the contracting parties must ensure that the individuals have access to an effective remedy;²⁵¹ that the person claiming remedy gets his right determined by a competent authority;²⁵² and to ensure that granted remedies are enforced.²⁵³

The last dimension of the right to life contain procedural demands in both the planning stage of an operation and in an investigative phase after an engagement with a lethal outcome.

For instance, the ECtHR found a violation of the procedural dimension in the *McCann* case. Here, the UK claimed that the killing of three members of the Provisional IRA was justified. The victims were suspected terrorists, who the UK believed were about to carry out a bombing in Gibraltar. The Court examined whether the use of force was compatible with Article 2 by scrutinizing, *inter alia*, "whether the anti-terrorist operation was planned and controlled by the authorities so as to minimize, to the greatest extent possible, recourse to lethal force",²⁵⁴ and found that this was not the case.

The ECtHR has clarified that the obligation to plan an operation also applies during military operations in armed conflicts. In *Isayeva, Yusupova and Bazayeva*, the applicants were attacked during an evacuation.²⁵⁵ The attack resulted in the death of Isayeva's two children and the wounding of Yusupova and Bazayeva.²⁵⁶ The question before the Court was whether the Russian military had planned and conducted in such a way as to avoid or minimize, to the greatest extent possible, damage to civilians.²⁵⁷ The Russian government claimed that the

²⁵⁰ *Makaratzis v Greece*, Judgment (Merits and Just Satisfaction), App. No. 50385/99, December 20, 2004, para 57.

²⁵¹ ICCPR Article 2(3)(a).

²⁵² ICCPR Article 2(3)(b).

²⁵³ ICCPR Article 2(3)(c).

²⁵⁴ *McCann v UK* para 194; Harris, O'Boyle and Warbrick (2014), p. 229.

²⁵⁵ *Isayeva, Yusupova and Bazayeva v. Russia*, Judgment (Merits and Just Satisfaction), App. Nos. 57947/00, 57948/00 and 57949/00, 24 February 2005, para 154.

²⁵⁶ *Isayeva, Yusupova and Bazayeva v Russia*, para 174.

²⁵⁷ *Isayeva, Yusupova and Bazayeva v Russia*, para 177.

deaths "had resulted from the use of force absolutely necessary in the circumstances for protection of a person from unlawful violence."²⁵⁸ However, the Court concluded that Russia violated Article 2 because of inadequate planning and disproportionate use of force.²⁵⁹

The obligation to plan operations is not without exceptions. As shown in the *Finogenov* case, the ECtHR may "occasionally depart from that rigorous standard of "absolute necessity," as "its application may be simply impossible where certain aspects of the situation lie far beyond the Court's expertise and where the authorities had to act under tremendous time pressure and where their control of the situation was minimal."²⁶⁰ The case concerned a dramatic rescue mission where Chechen terrorists had taken 950 hostages whose lives were in serious risk. The ECtHR accepted that, "with regard to the military aspect of the storming, no specific preliminary measures could have been taken" and that "the military preparations for the storming had to be taken very quickly and in full secrecy."²⁶¹ Thus, the Court accepts that states depart from their obligation to plan an operation in exceptional circumstances, and is "prepared to grant them a margin appreciation, at least so far as the military and technical aspects of the situation are concerned."²⁶² However, the Court might take a closer look at the subsequent phases of an operation where no serious time constraints exist and the authorities have control.²⁶³

The Court's remarks concerning the margin of appreciation in regard of military and technical aspects may become of importance in relation to operations involving AWS. For instance, states are likely to employ AWS in operations of self-defence, where these weapons provide speed and precision. If we picture that a defending autonomous missile neutralizes an incoming missile equipped with bacteriological, chemical or atomic weapons, the latter may affect the civilians inhabited in the area of interaction instead of the original target – a decision that is either in the hands of the AWS' operator or of the AWS itself. If we follow this train of thought, the possibility to plan the interaction may become impossible, and consequently the obligation to plan and control the operation ceases to apply.

²⁵⁸ *Isayeva, Yusupova and Bazayeva v Russia*, para 160.

²⁵⁹ Harris, O'Boyle and Warbrick (2014), p. 230.

²⁶⁰ *Finogenov and Others v. Russia*, Judgment (Merits and Just Satisfaction), App. Nos. 18299/03 and 27311/03, 20 December 2011, para 211.

²⁶¹ *Finogenov v Russia* para 213.

²⁶² *Ibid.*

²⁶³ *Finogenov v Russia*, para 214.

Finally, the state is obliged to carry out effective investigations in cases where an individual has lost his or her life because of lethal use of force by state agents. This obligation is required by implication from the obligation to protect the right to life read in conjunction with the state's general duty to secure it.²⁶⁴ The essential purpose of such investigations is "to secure the effective implementation of the domestic laws [...] and, in those cases involving State agents or bodies, to ensure their accountability for deaths occurring under their responsibility".²⁶⁵

The ICCPR Article 6 also obliges states to conduct proper investigations in case of allegations of violations of the right to life. Such investigations must be carried out "promptly, thoroughly and effectively through independent and impartial bodies."²⁶⁶ A failure to investigate can in itself constitute a breach of the Covenant.²⁶⁷

3.2.2. Justifiable deprivation of life

According to the ECHR Article 2(2), deprivation of life may be justified when the death results from a use of force that is "no more than absolutely necessary." Thus, while the general proportionality test means that any state interference imposed on an ECHR right "must be proportionate to the legitimate aim pursued,"²⁶⁸ the notion "strictly proportionate" demands a higher threshold before the aims set out in Article 2(2)(a)-(c) can be justified.²⁶⁹ Moreover, the Court conducts an objective assessment of whether the use of force is strictly proportionate.²⁷⁰ This is a crucial difference from the Court's ruling in cases concerning interference in other ECHR rights, except from Article 3, where states are allowed a wider margin of appreciation than that.²⁷¹

²⁶⁴ *Esmukhambetov and Others v. Russia*, Judgment (Merits and Just Satisfaction), App. No. 23445/03, 29 March 2011, para 115.

²⁶⁵ *Isayeva, Yusupova and Bazayeva v Russia*, para 208; *Esmukhambetov and Others v. Russia*, para 115.

²⁶⁶ *Report of the United Nations Fact Finding Mission on the Gaza Conflict* (2009), para. 866.

²⁶⁷ *Ibid.*

²⁶⁸ *Handyside v UK*, para 49.

²⁶⁹ *McCann v UK*, para 149.

²⁷⁰ Harris, O'Boyle and Warbrick (2014), p. 227.

²⁷¹ *Ibid.* The classic formulation of the margin of appreciation doctrine derived from *Handyside v UK*, in which the Court stated: "By reason of their direct and continuous contact with the vital forces of their countries, state authorities are in principle in a better position than the international judge to give an opinion on the..." "necessity" of a "restriction" or "penalty"...it is for the national authorities to make the initial assessment of the reality of the pressing social need implied by the notion of "necessity" in this context. Consequently, Article 10(2) leaves to

Whereas the ECHR Article 2(2) contains justifications for a deprivation of life, the ICCPR Article 6(1) has no explicit exceptions. Rather, what is decisive is whether the act that causes a death is in accordance with the law. Thus, in order to provide an effective protection of the right to life, the law must "strictly control and limit the circumstances in which a person may be deprived of his life by the authorities of a State".²⁷² Furthermore, the act in question must comply with the requirements of necessity, proportionality and precaution.²⁷³

According to the ICCPR Article 4 and ECHR Article 15, many of the IHRL obligations are derogable. However, the right to life is, in principle, non-derogable. In this respect, the ICCPR and ECHR depart: whereas the right to life is without exceptions in ICCPR, ECHR Article 15(2) justifies deprivation of life is where it results from 'lawful acts of war'.²⁷⁴

However, although contracting states have been militarily involved in a number of armed conflicts, no state has filed a formal derogation in respect of their activity.²⁷⁵ The need for such a formal derogation was addressed in *Hassan v UK*.²⁷⁶ The Court accepted "the lack of a formal derogation"²⁷⁷ with reference to the "consistent practice on the part of the High Contracting Parties."²⁷⁸ The state practice that the Court referred to – or, rather the *lack* of such practice – concerned the states' understanding of the ECHR in comparison to the GCs. As pointed out by the ECtHR, the four Geneva Conventions "intended to mitigate the horrors of war" and "were drafted in parallel to the [ECHR]."²⁷⁹ The Court concluded that derogation was not required during armed conflict, as long as the respondent state "specifically pleaded" – in its proceedings before the Court – that the article in question should be interpreted and applied in the light of the relevant provisions of IHL.

the contracting states a margin of appreciation. This margin is given both to the domestic legislator ("prescribed by law") and to the bodies, judicial amongst others, that are called upon to interpret and apply the laws in force," see *Handyside v. UK*, para 48-49. See also Harris, O'Boyle and Warbrick (2014), p. 14-17.

²⁷²*Suarrez de Guerrero v Columbia*, Communication No. 45/1979: Colombia, 31/03/82, CCPR/C/15/D/45/1979 (Jurisprudence), 31 March 1982, para 13.1; John Khemraadi Baboeram, Andre Kamperveen, Cornelis Harold Riedewald, Gerald Leckie, Harry Sugrim Oemrawsingh, Somradj Robby Sohansingh, Lesley Paul Rahman and Edmund Alexander Hoost. v. Suriname, Communication No. 146/1983 and 148 to 154/1983, U.N. Doc. Supp. No. 40 (A/40/40) at 187 (1985), para. 14.3.

²⁷³ Melzer (2008), p. 101.

²⁷⁴ ECHR Article 15(2).

²⁷⁵ The *Hassan* case, para 101; Harris, O'Boyle & Warbrick (2014), p. 830.

²⁷⁶ The *Hassan* case, para 99.

²⁷⁷ The *Hassan* case, para 103.

²⁷⁸ The *Hassan* case, para 101.

²⁷⁹ The *Hassan* case, para 102.

However, with reference to the *lex specialis* principle, the lawfulness of a lethal attack conducted by an AWS during an IAC must, in principle, be assessed with reference to IHL, hereunder the law of targeting.²⁸⁰

3.3. Does the prohibition against torture or inhuman treatment limit the use of autonomous weapon systems in international armed conflicts?

Both the ECHR and the ICCPR prohibits torture and inhuman or degrading treatment or punishment, commonly referred to as ill-treatment, inflicted by either physical or mental suffering.²⁸¹ This is relevant in the present thesis because a consequence of drone warfare is that civilians living in areas under surveillance and attacks may suffer from mental stress directly caused by fear and anguish for sudden attacks, in addition to severe physical suffering after an attack. I regard the appearance of AWS as analogous to drones in this matter, as it is not likely that civilians on the ground notice whether the attacking weapon system is remotely controlled or autonomous. Thus, it is plausible that civilians will experience the same, or greater, suffering if drones are replaced with AWS.

According to the UN Special Rapporteur on Torture, Juan Méndez, “[a] deadly attack on illegitimate targets amounts to cruel, inhuman or degrading treatment if [...] it results in serious physical or mental pain and suffering for the innocent victims”.²⁸² In addition to attacks, the sole presence of drones over an area may cause serious trauma to the civilian population living there. According to a case study made by Stanford Law School and NYU School of Law concerning the US drone warfare in Pakistan, “US drone strike policies cause considerable and under-accounted for harm to the daily lives of ordinary civilians, beyond death and physical injury.”²⁸³ The study underpins this position with reference to one of its findings, namely that:

²⁸⁰ See section 4.4.

²⁸¹ *Ireland v UK*, Judgment (Merits and Just Satisfaction), App. No. 5310/73, January 18, 1978, para. 167.

²⁸² United Nations News Centre, *Yemen: UN experts condemn drone strikes on mistaken wedding sessions*, 26 December 2013.

²⁸³ International Human Rights and Conflict Resolution Clinic (Stanford Law School) and Global Justice Clinic (NYU School of Law), *Living Under Drones: Death, Injury, and Trauma to Civilians from US Drone Practice in Pakistan* (September, 2012), p. vii.

“Drones hover twenty-four hours a day over communities in northwest Pakistan, striking homes, vehicles, and public spaces without warning. Their presence terrorizes men, women, and children, giving rise to anxiety and psychological trauma among civilian communities.”²⁸⁴

According to another study made by the human rights organization Reprieve, which also investigated the US drone program in Pakistan, drone attacks are not as precise as US official claims. The study holds that 1,147 people have been killed under drone attacks, although only 41 people have been targeted.²⁸⁵ The pressure on the civilian population living under the drones have a significant impact on their way of living, which is, according to Reprieve’s director Clive Stafford Smith, “collapsing” as “kids are too terrified to go to school, adults are afraid to attend weddings, funerals, business meetings, or anything that involves gathering in groups. Yet there is no end in sight, and nowhere the ordinary men, women and children of North West Pakistan can go to feel safe.”²⁸⁶

In the following sections, I will limit my assessment to whether the use of AWS in IACs may violate the prohibition against torture or inhuman treatment under respectively the ECHR and the ICCPR. Thus, the prohibition against degrading treatment and inhuman or degrading punishment falls outside the scope of the present discussion.

According ECHR Article 3, “[n]o one shall be subjected to torture or to inhuman or degrading treatment or punishment.” Some have argued that the provision should be strictly interpreted and thus only cover the most serious forms of ill-treatment.²⁸⁷ However, with reference to the ECtHR’s case law, intermediate acts of ill-treatment also fall within the scope of Article 3.²⁸⁸ The same prohibition is codified in the ICCPR Article 7, which states that “[n]o one shall be subjected to torture or to cruel, inhuman or degrading treatment”.

²⁸⁴ Ibid.

²⁸⁵ The Guardian, *41 men targeted but 1,147 people killed: US drone strikes – facts on the ground*, 24 November 2014.

²⁸⁶ CNN.com, *Drone strikes kill, maim and traumatize too many civilians, U.S. study says*, CNN Wire Staff (September 26, 2012).

²⁸⁷ Harris, O’Boyle and Warbrick (2014), p.

²⁸⁸ Harris, O’Boyle and Warbrick (2014), p. 235.

The provisions are written in absolute terms. Thus, violations of the prohibition cannot be justified with reference to the public interest, and they are non-derogable in times of armed conflict.²⁸⁹ For instance, the ECtHR has concluded that “the undeniable difficulties inherent in the fight against crime, particularly with regard to terrorism, cannot result in limits being placed on the protection to be afforded in respect of the physical integrity of individuals.”²⁹⁰ Similarly, although most of the case law regards suffering from physical assaults, the “infliction of mental suffering by creating a state of anguish and stress by means other than bodily assault” may qualify as “non-physical torture”.²⁹¹ Likewise, with reference to the legal standing under the ICCPR, the HRC has stated that “no justification or extenuating circumstances may be invoked to excuse a violation of article 7 for any reason”.²⁹²

Although the cited decision concerned the fight against crime, the non-derogable nature of the provision implies that states are obliged to respect the physical integrity of individuals also during IACs. The ECtHR’s notion “respect of” should nevertheless be interpreted in the light of the prevailing circumstances; namely that the nature of an IAC may result in lawful inflictions on the physical integrity of individuals which would not be lawful in peacetime.

In *Kudla v Poland*, the ECtHR stated that ill-treatment has to “attain a minimum level of severity” in order fall within the ECHR Article 3.²⁹³ The level of severity “depends on all the circumstances of the case, such as the nature and context of the treatment, the manner and method of its execution, its duration, its physical or mental effects, and, in some cases, the sex, age and state of health of the victim”.²⁹⁴ Likewise, the terms in the ICCPR Article 7 lack a statutory definition and the prohibited acts must be identified with reference to the “nature, purpose and severity” applied.²⁹⁵ In the present context, the method of execution and the mental effects are, as I will show below, of special importance.

²⁸⁹ ECHR Article 15(2) and ICCPR Article 4(2).

²⁹⁰ *Tomasí v. France*, Judgment (Merits and Just Satisfaction), App. No. 12850/87, August 27, 1992, para. 115; *Denizci and Others v. Cyprus*, Judgment (Merits and Just Satisfaction), App. Nos. 25316/94, 25317/94, 25318/94, 25319/94, 25320/94, 25321/94, 27207/95, May 23, 2001, para. 383.

²⁹¹ 12 YB (the *Greek case*) 1 at 461 (1969) ComRep; CM Res DH 70) 1.

²⁹² Human Rights Committee, General Comment 20, Article 7 (Forty-fourth session, 1992), Compilation of General Comments and General Recommendations Adopted by Human Rights Treaty Bodies, U.N. Doc. HRI/GEN/1/Rev.1 at 30 (1994), para 3.

²⁹³ *Kudla v. Poland*, Judgment (Merits and Just Satisfaction), App. No. 30210/96, 26 October 2000, para. 91.

²⁹⁴ *Kudla v Poland*, para 91.

²⁹⁵ HRC, General Comment 20, para 4.

According to the case law from the ECtHR, the categorization of the ill-treatment depends on a mental element which must be present at the time of the violation. For instance, in order for an act to qualify as torture under the ECHR, it must be a “deliberate inhuman treatment causing very serious and cruel suffering”.²⁹⁶ The suffering must have been inflicted intentionally and there must have been a specific aim underlying the ill-treatment.²⁹⁷

With reference to AWS, it is not likely that the machine itself will act with the required intent and purpose so that the act amounts to torture under the ECHR. In order to invoke that there has been a violation of the prohibition against torture, the programmer or operator would, with intention, have to inflict a qualified form of suffering by the use of an AWS. In similarity with other means and methods of warfare, the use of AWS may amount to torture if the programmer or operator deliberately and with a specific purpose inflicts very serious and cruel suffering.

In contrast to torture, an instance of inhuman treatment needs neither to be inflicted with intention nor with a specific purpose.²⁹⁸ What is required as a minimum is that the ill-treatment causes a qualified form of "either actual bodily injury or intense physical or mental suffering."²⁹⁹ In the following, I will focus on whether the use of AWS in itself may inflict suffering which is severe enough to amount to ill-treatment.

In *Esmukhambetov and Others v Russia*, the ECtHR examined whether the indiscriminate bombing of a village resulting in the deaths of 5 civilians amounted to ill-treatment under ECHR Article 3. The applicants complained that they had suffered “severe mental distress and anguish in connection with the attack on their village, the deaths of their close relatives and the destruction of their houses and other property.”³⁰⁰ The Court found that Article 3 did not apply to the incidents where the applicant in question had solely witnessed the destruction of his home or found his relatives dead. The contrary was the case in regard of the applicant named Esmukhambetov, who witnessed the killing of his whole family and consequently “experienced a shock of such intensity that he suffered from a temporarily loss of

²⁹⁶ *Ireland v UK*, para 167.

²⁹⁷ *Denizci and Others v Cyprus; Ilhan v Turkey*, Judgment (Merits and Just Satisfaction), App. No. 22277/93, June 27, 2000, para 85.

²⁹⁸ *Denizci v Cyprus*, para 384 cf. para 386.

²⁹⁹ *Kudla v Poland*, para 92.

³⁰⁰ *Esmukhambetov and Others v Russia*, para 180.

memory”.³⁰¹ Thus, the Court considered that the suffering he endured was of such severity that it amounted to inhuman treatment within the meaning of Article 3.³⁰²

The above-mentioned studies show that individuals have been targeted without precaution in drone attacks, and that these attacks can result in severely traumatized eyewitnesses. Thus, given that the engagement falls within the attacking state’s jurisdiction, similar attacks conducted with an AWS may, with reference to *Esmukhambetov*, amount to inhuman treatment.

³⁰¹ *Esmukhambetov and Others v Russia*, para 190.

³⁰² *Ibid.*

4. How international humanitarian law regulate the use of autonomous weapon systems in international armed conflicts

IHL governs the conduct of hostilities during IACs. As the term ‘humanitarian law’ suggests, humanitarian considerations are one of the driving forces behind modern IHL.³⁰³ The other is basically the nature of armed conflict, which demands that the adversaries are allowed to use violent measures necessary to defeat their enemies.³⁰⁴ Hence, IHL provides a legal order seeking to establish a balance between the unavoidable brutality of war and considerations of humanity.³⁰⁵

Application of IHL requires that the conflict in question amount to an IAC.³⁰⁶ As no multilateral treaty defines "armed conflict," state practice and the subsidiary sources provide the arguments.³⁰⁷ According to GC I/II/III/IV Common Article 2, the conventions "apply to all cases of declared war or of any other armed conflict which may arise between two or more of the High Contracting Parties."³⁰⁸ A preliminary question is thus at what point the conflict reaches the required threshold.

4.1. When does the conflict amount to an international armed conflict?

Two theories are prevailing: the "first-shot"³⁰⁹ theory and the theory that some incidents – involving the use of force – are simply hostilities "short of war."³¹⁰ There are a number of issues where the answer depends on the choice of theory. For instance, questions concerning the treatment of the wounded or captured members of the armed forces depend on the prevailing legal regime. Moreover, IHRL receives a different content once an armed conflict has broken out.

³⁰³ Dinstein, Y. (2010), page 4; Solis, G.D. (2010), page 7.

³⁰⁴ Dinstein, Y. (2010), page 4

³⁰⁵ Fleck (2013), p. 36.

³⁰⁶ Dinstein, Y. (5th edition, 2011). *War, Aggression and Self-Defence*. Cambridge: Cambridge University Press, p. 9.

³⁰⁷ International Law Association Committee on the Use of Force, Final Report on the Meaning of Armed Conflict in International Law (2010) (74 Int'l L. Ass'n Rep. Conf. 676 2010), page 681.

³⁰⁸ GCs Common Article 2 first paragraph; see also The International Criminal Tribunal for the former Yugoslavia, *The Prosecutor v. Dusko Tadic*, Decision on the Defence Motion for Interlocutory Appeal on Jurisdiction, IT-94-1-A, 2 October 1995, paragraph 70. Declarations of war are rather the exception than the rule today, and I will not examine this condition.

³⁰⁹ Meaning that IHL applies once a State uses armed force against another, see Fleck (2014), page 44-45.

³¹⁰ Hostilities not reaching the armed conflict threshold, like for instance border clashes or single incidents of armed force, see Dinstein, Y. (2011), page 11 and Fleck (2014), page 45.

The Commentary on GC I holds that "[a]ny difference arising between two States and leading to the intervention of armed forces is an armed conflict within the meaning of Article 2, even if one of the Parties denies the existence of a state of war. It makes no difference how long the conflict lasts, or how much slaughter takes place."³¹¹ Furthermore, it contends that "[i]f there is only a single wounded person as a result of the conflict, the Convention will have been applied as soon as he has been collected and tended [...] and his identity notified to the Power on which he depends."³¹² The latter statement may reflect the "first shot"-theory – a position that is perhaps not surprising as the ICRC's objective is clearly to ensure humane treatment of persons involved in hostilities.³¹³

On the other hand, the "short of war" theory provides a more flexible approach where states are not as quickly allowed the 'privilege to kill' which IHL brings about. The International Law Association Committee on the Use of Force describes such incidents as follows:

"[A] distinction is made between the violence that gives rise to the right of a state to claim the belligerent's privileges to kill without warning, detain without trial, or seize cargo on the high seas. *The violence must be organized and intense* – even between sovereign states – before the otherwise prevailing peacetime rules are suspended. States, international organizations, courts and other legitimate actors in the international legal system distinguish lower level or chaotic violence from armed conflict."³¹⁴

Dinstein – who favors this theory³¹⁵ – mentions a number of typical incidents short of war: Border patrols of neighboring countries which exchange fire, naval units which torpedo vessels flying another flag and interceptor planes which shoot down aircraft belonging to another state.³¹⁶ According to this approach, it is likely that single instances of targeted

³¹¹ Pictet, J (1952). *Commentary on the Geneva Convention for the Amelioration of the Condition of the Wounded and Sick in Armed Forces in the Field*, International Committee of the Red Cross, Geneva, page 32.

³¹² Pictet, J. (1952), page 32-33.

³¹³ Pictet, J. (1952), page 52.

³¹⁴ International Law Association Committee on the Use of Force, Final Report on the Meaning of Armed Conflict in International Law (2010) (74 Int'l L. Ass'n Rep. Conf. 676 2010), page 678 (emphasized by me). The ILA Committee on the Use of Force's mandate was to provide and clarify "an accurate understanding of the legal meaning of armed conflict", see the Final Report page 681.

³¹⁵ Dinstein, Y. (2010), p. 11.

³¹⁶ Ibid.

killings conducted by AWS (or drones) will be described as a lower level of violence and thus not fall within the IHL regime.

According to Fleck, the acceptance of incidents "short of war" – without regarding them as IACs – "bears the risk of creating an international legal vacuum or of depriving certain categories of persons the protections that [IHL] provides."³¹⁷ His suggestion is to adhere to the "first shot" theory in such a way that where a minor incident between states occurs, the factual circumstances determines which part of IHL that applies. Consequently, the reason for the inapplicability of IHL must be "purely factual rather than legal."³¹⁸ Thus, the "first shot"-theory seems to require objective evidence: Once the conditions are fulfilled, IHL applies to the specific circumstances in question.

However, in reality, the legal effect of an incident depends on the later action of the states involved. In Dinstein's words, "[a]s long as both Parties choose to consider what has transpired as a mere incident, and provided that the incident is rapidly closed, it is hard to gainsay that [they have engaged in an IAC]."³¹⁹ An example of such an incident short of war is the downing of a Russian warplane by Turkey on the Syrian border in 2015. Although the downing was condemned, it did not result in an armed conflict between Turkey and Russia.³²⁰

4.2. The balance between military necessity and humanitarian considerations

Once a violent situation qualifies as an armed conflict and IHL becomes the prevailing body of law, the principle of military necessity justifies that the belligerents apply "any amount and kind of force to compel the complete submission of the enemy with the least possible expenditure of time, life and money".³²¹ Thus, in principle, states are free to use AWS in the manner they prefer. However, any destructive action taken by an armed force against an adversary must be necessary from a military perspective. In the words of the American

³¹⁷ Fleck (2013), p. 45

³¹⁸ Fleck (2013), p. 45.

³¹⁹ Dinstein, Y. (2010) p. 11.

³²⁰ BBC.com, *Turkey's downing of Russian warplane – what we know*, 1. December 2015.

³²¹ *Hostage case (USA v. List et al.)*, American Military Tribunal, Nuremberg, Judgment of 19 February 1948, in *Trials of War Criminals Before the Nuremberg Military Tribunals Under Control Council Law No. 10, Volume XI/2*, p. 1253.

Military Tribunal in the *Hostage* case: "[D]estruction as an end in itself is a violation of international law."³²²

The principle of military necessity is well established in IHL.³²³ Although neither the GCs nor AP I provide a statutory definition of the term,³²⁴ one can derive its content from various provisions and customary law.³²⁵ According to AP I Article 52(2), belligerents are only permitted to attack those objects "whose total or partial destruction, capture or neutralization, in the circumstances ruling at the time, offers a definite military advantage." The notion "definite military advantage" means that the adversaries are not entitled to carry out attacks "which only offers potential or indeterminate advantages."³²⁶ Thus, the notion of "military advantage" provides a counterweight to the notion of military necessity, as it is not sufficient that an adversary deems an action necessary "to compel the complete submission of the enemy" in order to render an attack lawful.

In order to comply with IHL and take proper account of the balance between military necessity and humanitarian considerations, the person who is planning or performing a military operation is obliged to take precautionary measures in attacks.³²⁷ This means that he or she has to consider how to comply with these principles and other applicable rules in the planning of and during an attack in order to minimize the effects on civilians and civilian objects when conducting military operations³²⁸ – an exercise which may be challenging when the decision of engagement is taken by the AWS.

In addition to the mere regulation of the conduct between the adversaries, IHL includes rules concerning the legality of weapons. As any use of an illegal weapon would be contrary to IHL, the first main question is whether AWS are illegal *per se*.

³²² *Hostage case (USA v. List et al.)*, p. 1253-4.

³²³ Fleck (2013), p. 34.

³²⁴ Military necessity is mentioned in GC I Articles 8, 30, 33, 34 and 50; GC II Articles 8, 28 and 51; GC III Articles 8, 76, 126 and 130; GC IV Articles 9, 49, 53, 55, 108, 112 and 147; AP I Articles 54, 62, 67 and 71.

³²⁵ Solis, G. (2010), p. 259.

³²⁶ The Commentary, p. 636 para 2014.

³²⁷ AP I Article 57.

³²⁸ Commentary on APs, p. 680, para 2191; Fleck (2013), p. 244.

4.3. The legality of autonomous weapon system under international humanitarian law

Legal restrictions concerning the legality of weapons are essential to ensure that the above-mentioned balance between humanitarian and military considerations³²⁹ is effective and enforceable. Thus, IHL is based on the premise that "[i]n any armed conflict, the right of the Parties to the conflict to choose methods or means of warfare is not unlimited."³³⁰ If states were free to possess – and presumably use – any weapon, this could lead to a dilution of the whole IHL. Consequently, weapons are inherently unlawful if states are unable to comply with relevant rules of IHL due to the expected use of the weapon in question.

The ICJ affirmed this contention in the Nuclear Weapons case, where it stated that:

"[H]umanitarian law, at a very early stage, prohibited certain types of weapons either because of their indiscriminate effect on combatants and civilians or because of the unnecessary suffering caused to combatants, that is to say, a harm greater than that unavoidable to achieve legitimate military objectives."³³¹

Thus, weapons must be able to comply with two "cardinal principles" in order to be lawful: the prohibition against indiscriminate effects³³² and the principle prohibiting unnecessary suffering.³³³

It follows from the prohibition against indiscriminate effects that IHL does not allow states to use weapons which does not enable those who plan or conduct a military operation to distinguish civilians or civilian objects from military objectives. This is one aspect of the principle of distinction.³³⁴ Similarly, an attack is indiscriminate if "the effects of which cannot be limited as required by the Protocol, and consequently, in each such case, are of a nature to strike military objectives and civilians or civilian objects without distinction."³³⁵

³²⁹ See section 4.2.

³³⁰ AP I Article 35(1); HC IV Article 22.

³³¹ *Nuclear Weapons* case, para. 78.

³³² *Ibid.*

³³³ Dinstein, Y. (2010) p. 62 and 63. This principle is also referred to as the principle of humanity, see Clapham and Gatea (2014), p. 282. Casey-Maslen, S. and Weill, S. (2014) also follows such an approach, see p. 246.

³³⁴ AP I Article 51(4)b).

³³⁵ AP I Article 51(4)c).

Types of indiscriminate attacks are, for instance, “an attack by bombardment by any methods or means which treats as a single military objective a number of clearly separated and distinct military objectives located in a city, town, village or other area containing similar concentration of civilians or civilian objects.”³³⁶ Chemical³³⁷ and bacteriological³³⁸ weapons are two examples of means of warfare that create indiscriminate effects and consequently violate the principle of distinction.

However, as Thurnher points out, the prohibition “focuses solely on the weapon's effects rather than its delivery method. The fact that a targeting decision might be made autonomously by the weapon system does not factor into the analysis.”³³⁹ I will not go further into this topic.

According to the second principle, it is prohibited to cause unnecessary suffering to combatants. This prohibition is a recodification and juxtaposition of HC II (1899) Article 23(e) and HC IV (1907) Article 23(e). It is currently codified in AP I Article 35(2), which states that “weapons, projectiles and materials and methods of warfare of a nature to cause superfluous injury or unnecessary suffering.”³⁴⁰ Moreover, it constitutes the red thread in the CCW.³⁴¹ Although the relevant provisions are quite similar, the conditions are not identical. While the HC IV (1907) prohibits weapons that are calculated to cause unnecessary suffering, AP I has lowered the threshold and introduced an objective standard: A weapon is illegal if it is of a nature to cause unnecessary harm. According to the Commentary on the Aps, the wording was changed because the condition “calculated to cause” was considered inappropriate.³⁴² Thus, what is decisive according to AP I, is the “objective character” of the weapon rather than the intentions of those in charge of its use.³⁴³

³³⁶ AP I Article 51(5)(a).

³³⁷ Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction, January 13, 1993.

³³⁸ Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction, 10 April 1972.

³³⁹ Thurnher, J. (2016), p. 186.

³⁴⁰ AP I Article 35(2).

³⁴¹ The Preamble of the CCW.

³⁴² Commentary on the APs, p. 406-407, para. 1426.

³⁴³ Dinstein, Y. (2010), p. 64.

However, if states were to take AP I Article 35(2) by its wording, they would have to carry out an extensive and broad examination of all possible ways of use and misuse of an AWS. According to Clapham and Gaeta, the practice of states seems to be to examine the weapons “in relation to their designed or intended use”.³⁴⁴ On this basis, the same authors suggest, as a principle of international weapons law, that “the inherent lawfulness of a weapon is related to its designed purpose or expected normal use and not its potential to cause either superfluous injury or unnecessary suffering, or indiscriminate effect if used inappropriately.”³⁴⁵ Several authors seem to agree on the latter point of view.³⁴⁶ According to Article 36, which I will examine below, states are required to determine the lawfulness of a weapon in respect of its designed use.³⁴⁷ The need for coherency between these provisions is an argument in favor of such an interpretation.

Although the terms “superfluous injury” and “unnecessary suffering” are not controversial, they lack authoritative definitions and are consequently left to interpretation.³⁴⁸ States did not manage to agree on the significance and scope of the principle “as far as actual means used in combat are concerned.”³⁴⁹ Due to this definitional issue, the “concept of superfluous injury and unnecessary suffering, its objective effect on the victim (severity of the injury, intensity of the suffering), and its relation to military necessity (rendering the enemy *hors de combat*) are not interpreted in a consistent and generally accepted manner.”³⁵⁰ However, according to the above-mentioned passage from the *Nuclear Weapons* case, “unnecessary suffering” must be regarded as “a harm greater than that unavoidable to achieve legitimate military objectives.” Thus, IHL requires a balancing test between the suffering, injury and military necessity. If the harm is not necessary in order to attain a military advantage, it is prohibited to use weapons which do not provide an alternative way to reach the objective.

The threshold is nevertheless very high, and there are not many weapons deemed to be illegal in themselves. This is perhaps an expected result, as the potential effects and suffering relies on the context surrounding the specific use of the weapon in question. If a state uses an indiscriminate weapon on the open sea where there are no civilians, the distinction principle

³⁴⁴ Clapham, A. and Gaeta, P. (2014), p. 287.

³⁴⁵ Clapham, A. and Gaeta, P. (2014), p. 288.

³⁴⁶ Corn et.al., (2012) p. 204-205.

³⁴⁷ See section 5.2.

³⁴⁸ Clapham, A. and Gaeta, P. (2014), p. 284.

³⁴⁹ Commentary on the APs, p. 403, para 1416.

³⁵⁰ Commentary on the APs, p. 409-410, para 1439.

does not activate. The same would apply to a scenario where a weapon potentially of a nature to cause superfluous suffering is employed against another machine. In other words, the activation of the principles is highly reliant on the context in which the weapons are used.

With reference to the steady advancement of technology, states seem eager to discuss whether increasingly autonomy in weapons should have an impact on their legality. For instance, states have agreed to additional protocols to the CCW and other conventions concerning a variety of weapons.³⁵¹ As already mentioned, the CCW Expert meetings have brought AWS into the international public eye.

4.3.1. Analogous interpretation of the CCW Protocol II

The United Nations has played an important role in the development of international weapons law through the CCW, including its protocols,³⁵² which are based on the principles that the right to choose methods and means of warfare is not unlimited and on the prohibition of weapons that cause unnecessary suffering and superfluous injuries.³⁵³

There are several protocols under the CCW,³⁵⁴ whereas Protocol II concerning mines, booby traps and other devices is of special interest in the present context. Protocol II relates to "the use on land of the mines, booby-traps and other devices [...] including mines laid to interdict beaches, waterway crossings or river crossings".³⁵⁵ It prohibits the contracting states to use these weapons in breach with the distinction principle and the prohibition against their indiscriminate use.³⁵⁶

One type of mines may be analogous to AWS. These are "remotely delivered mines," which the CCW Protocol II define as mines which are "delivered by artillery, rocket, mortar or similar means or dropped from an aircraft."³⁵⁷ Some argue that the location of remotely

³⁵¹ The Ottawa Convention of 1997 on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and their Destruction, followed by the Oslo Convention of 2008 on Cluster Munitions.

³⁵² CCW Convention.

³⁵³ CCW Preamble,

³⁵⁴ Protocol I on Non-Detectable Fragments prohibits the use of any weapon the primary effect of which is to injure by fragments that does not show under X-rays Protocol on Non-Detectable Fragments.

³⁵⁵ Protocol on Prohibitions or Restrictions on the Use of Mines, Booby Traps and Other Devices Article 1.

³⁵⁶ Protocol II Article 3(2) and (3).

³⁵⁷ CCW Protocol II Article 2(2).

delivered mines “can only be estimated and they pose a special menace to civilians.”³⁵⁸ This may be similar to a case where the AWS lacks meaningful human control and oversight, and are thus moving freely within an area.³⁵⁹

Protocol II seeks to redress such a feature by demanding that, if these mines are anti-personnel, they must be equipped with “an effective self-destruction or self-neutralization mechanism and have a back-up self-deactivation feature”. This mechanism must be “designed so that the mine will no longer function as a mine when [it] no longer serves the military purpose for which it was placed in position.”³⁶⁰ One argument against AWS – mainly FAWS – is the fear that states can lose control over the use of lethal force. Thus, if, for instance, an AWS like Israel’s Harpy is advanced to become anti-personnel, one may argue that it should be equipped with a self-destruction mechanism in order to be lawful means of warfare.

4.3.2. The impact of the Martens Clause on international weapons law

As mentioned in section 1.1, the Martens Clause has played an important role in international weapons law. Due to the reiteration of the Clause in various treaties and its standing as a customary norm, it reminds the international actors about their obligation to emphasize humanitarian considerations as well as military necessity when they develop and employ weapons. One might say that the prohibitions against indiscriminate weapons and unnecessary suffering are sufficient in this respect. However, the Clause may open up for additional humane considerations. For instance, as shown above in section 3.3, the AWS may be used in a way which violates the prohibition against inhumane or degrading treatment. As humane treatment of persons is required under IHL,³⁶¹ a reference to the Clause may strengthen an argument in favor of a ban or strict regulation of AWS.

4.3.3. Preliminary conclusion

Current AWS do not fall within a customary founded prohibition. Moreover, it is not likely that states will ban AWS altogether. However, there may be a consensus in regard of the

³⁵⁸ Dinstein, p. 72.

³⁵⁹ This is especially relevant for FAWS and human-supervised AWS that do not enable the operator to carry out meaningful human control. Thus, states that develop such weapons are obliged to be careful in this process.

³⁶⁰ Protocol II Article 6(3).

³⁶¹ For instance, GC IV Article 27 second sentence holds that protected persons “shall at all times be treated humanely.”

limited employment of AWS with meaningful human control. In any matter, states must act in compliance with IHL, and may not use weapons that do not meet the requirements – including FAWS in so far the technology is not sufficiently advanced. The next question is thus how IHL, with reference to the law of targeting, regulate the use of them during military operations.

4.4. How the law of targeting applies on military operations conducted with autonomous weapon systems

The law of targeting seek to achieve the above-mentioned balance between the need to achieve a military goal and the need for humanitarian protection through rules deriving from the fundamental principles of military necessity, distinction, proportionality, humanity and precautions in attacks. In the law of targeting, the principle of precautions in attacks is of special relevance, as it obliges those who are in charge of a military operation to plan and conduct the engagement in compliance with the other principles.

4.4.1. Compliance with the obligation to take precautions in attacks when an attack is conducted with autonomous weapon systems

The obligation to take precautions in attacks is a fundamental principle of IHL, which is codified in AP I Article 57(1). This provision holds that the adversaries must take "constant care [...] to spare the civilian population, civilians and civilian objects" when they conduct attacks,³⁶² and addresses the chain of command by obliging "those who plan or decide upon an attack" to "do everything feasible" to comply with the distinction principle.³⁶³ Moreover, they ought to "take all feasible precautions in the choice of means and methods of attack" in order to avoid or minimize incidental loss of or injury to civilians or damage to civilian objects³⁶⁴ and to refrain from deciding to launch disproportionate attacks.³⁶⁵

The term "feasible" is not defined in the provision. According to CCW Protocol II, feasible precautions are "those precautions which are practicable or practically possible taking into account all circumstances ruling at the time, including humanitarian and military

³⁶² AP I Article 57 (1).

³⁶³ AP I Article 57(1)(i).

³⁶⁴ AP I Article 57(1)(ii).

³⁶⁵ AP I Article 57(1)(iii).

considerations.³⁶⁶ This description is similar to uncontested submissions from several states upon the ratification of AP I,³⁶⁷ and is presumably in accordance with the ordinary meaning of Article 57.

What is "practically possible" largely depends on the technical means of detection available to the belligerents.³⁶⁸ Thus, when a state possesses equipment like surveillance UCAVs, the term "feasible" may suggest that the state is obliged to gather information about potential military objectives through aerial reconnaissance and intelligence. However, the military advantage plays a role in the assessment of what is "practically possible".³⁶⁹ For instance, if the decision to attack must be taken fast and the potential target has a big military value, this may allow for an increased margin of error.³⁷⁰ Moreover, if the decision to attack is taken by a combatant not sufficiently high in rank to obtain accurate information about a target, this may lower the obligation to take precautions if he or she engages a target of opportunity.³⁷¹

In order to comply with Article 57, those in charge must evaluate the information due to "a serious check of its accuracy" once it is obtained.³⁷² In case of doubt, the presumption is that the target is of civilian character.³⁷³ Thus, if there is reason to doubt the legal status of the objective to be attacked, those in charge "must call for additional information and if need be give orders for further reconnaissance". One may argue that the use of AWS in military operations should strengthen the rule of benefit of the doubt; when the armed forces do not risk their own combatants' lives, they should perhaps be more cautious when they choose target and ensure that it is a military objective.

If it becomes "apparent that the objective is not a military one or is subject to special protection" or if the harm can be expected to be disproportional in relation to the anticipated military advantage, the attack must be cancelled or suspended.³⁷⁴ In any case, the final

³⁶⁶ CCW Additional Protocol II Article 3(10) second sentence.

³⁶⁷ Fleck (2013), p. 244.

³⁶⁸ Commentary on the APs, p. 682 para 2199.

³⁶⁹ Johansen, S. R. and Slensvik, T. (2016), *Lovlig angrep eller våpen på ville veier? Contribution in Når dronene våkner: Autonome våpensystemer og robotisering av krig*, p. 150-151.

³⁷⁰ Op.cit., p. 151.

³⁷¹ Dinstein, Y. (2010), p. 141.

³⁷² Commentary on the APs, p. 681 para 2195.

³⁷³ AP I Articles 50(1) and 52(3).

³⁷⁴ AP I Article 57(2)(b).

decision must be taken in good faith and be based on common sense with an aim to identify the target and its surroundings in order to spare the civilian population and civilian objects as far as possible in compliance with the principle of distinction.³⁷⁵

4.4.1.1. Compliance with the principle of distinction when an attack is conducted with autonomous weapon systems

According to AP I Article 48, states are only permitted to "direct their operations [...] against military objectives."³⁷⁶ Coherently, AP I Article 51(4) prohibits attacks "not directed at any specific military objective."³⁷⁷ These provisions show different aspects of the principle of distinction, whose purpose is to protect civilians and civilian objects from the effects of an armed conflict. With reference to the protection provided by the principle, it is described as perhaps the most fundamental pillar of IHL³⁷⁸ and "the most significant battlefield concept a combatant must observe."³⁷⁹

An adversary using an AWS to carry out an attack must ensure that it is programmed in such a way that it is capable to identify a military objective, and thus limit its targeting to military objects and combatants.

4.4.1.1.1. Identification of military objects

The point of departure is AP I Article 51(2), which states that "the civilian population as such, as well as individual civilians, shall not be the object of attack."³⁸⁰ In order for a target to qualify as a lawful target, it has to be the counterpart to civilians and civilian objects – namely a "military objective." This rule has status as customary law and is reiterated in several treaties.³⁸¹ While the members of the armed forces are clearly within the targetable ambit, AP I Article 52(2) states that military objectives in the shape of objects are those which:

³⁷⁵ Commentary on the APs, p. 682, para 2198.

³⁷⁶ Additional Protocol I Article 48.

³⁷⁷ AP I Article 51(4)(a).

³⁷⁸ Dinstein, Y. (2010), p. 62.

³⁷⁹ Solis, G. (2010), p. 251.

³⁸⁰ AP I Article 51(2).

³⁸¹ Dinstein, Y., *Legitimate Military Objectives Under the Current Jus in Bello*, International Law Studies, Naval War College, Newport, Rhode Island (Volume 78, 2002), p. 139.

“by their nature, location, purpose or use make an effective contribution to military action and whose total or partial destruction, capture or neutralization, in the circumstances ruling at the time, offers a definite military advantage.”³⁸²

Thus, there are two cumulative criteria that must be fulfilled for a target to be lawful: the target must make an effective contribution to the military action due to its nature, location, purpose or use, and the attack must result in a definite military advantage.³⁸³ The provision is, however, ambiguous and abstract, and much is left to the specific interpreter – and thus human subjectivity.

Compliance with the principle of distinction requires situational awareness and continuous evaluation as military objects can have a dynamic nature: An object may be civilian, like for instance a church or a hospital. Yet, once the civilian object is used by the adverse armed forces in a way which violates its protection, it may become a legitimate military object.³⁸⁴

Hence, in order to comply with the distinction principle, the programmer, operator, or, if ever possible, the AWS who is deciding to attack must be able to identify the object with reference to both “nature, location, purpose or use”. Furthermore, there must be room to assess whether to cancel or suspend the attack in accordance with AP I Article 57(2)(b), unless the situation makes such an assessment impossible.

4.4.1.1.2. Identification of lawful combatants

A state is entitled to attack combatants. However, only lawful combatants are entitled to participate in armed conflicts and enjoy the protection offered them by IHL.³⁸⁵ In order to be a lawful combatant, the key requirement is that the individual is a *de facto* member of the armed forces.³⁸⁶ On the contrary, unprivileged combatants are those who take direct part in hostilities although they are not members of the armed forces.³⁸⁷

³⁸² Additional Protocol I article 52(2).

³⁸³ Dinstein, Y., *Legitimate Military Objectives Under the Current Jus in Bello*, International Law Studies, Naval War College, Newport, Rhode Island (Volume 78, 2002), p. 143.

³⁸⁴ Dinstein, Y., *Legitimate Military Objectives Under the Current Jus in Bello*, International Law Studies, Naval War College, Newport, Rhode Island (Volume 78, 2002), p. 144.

³⁸⁵ AP I Article 43(2).

³⁸⁶ Dinstein, Y. (2010), p. 33.

³⁸⁷ *Ibid.*

The Annex of HC IV was the first treaty to address the matter, followed by the GCs and AP I. According to HC IV Article 1, the laws, rights and duties of war apply to armies that are obliged to and fulfill the following conditions:

- 1) “To be commanded by a person responsible for his subordinates;
- 2) To have a fixed distinctive emblem recognizable at a distance;
- 3) To carry arms openly; and
- 4) To conduct their operations in accordance with the laws and customs of war.”

GC I/II/III and AP I reiterate these conditions in their common description of persons privileged with prisoners of war-status.³⁸⁸ Moreover, GC III Article 4 implies three additional conditions so there are seven conditions altogether:³⁸⁹

- 5) Organization, meaning that lawful combatants must act within a hierarchical framework subject to supervision;³⁹⁰
- 6) Belonging to a belligerent party, meaning that any irregular unit acting on behalf of a state party to the conflict must be under control by this state party, and there must be “a relationship of dependence and allegiance of these irregulars *vis-à-vis* that Party to the conflict;”³⁹¹ and
- 7) Lack of duty of allegiance to the detaining power, meaning that the combatant must not act against his or her own nation. For instance, if a Norwegian soldier fights *against* the Norwegian army in, let us say, Iraq, he or she will not be a lawful combatant entitled to PoW-status.³⁹²

States have accepted the definition of combatants as stated in these two treaties, and it is assumed that they have acquired status as customary international law.³⁹³

³⁸⁸ GC I/II/III Articles 13/13/4, whereas GC IV solely concerns prisoners of war and AP I Article 43(1).

³⁸⁹ Dinstein, Y. (2010), p. 45.

³⁹⁰ Ibid.

³⁹¹ *Prosecutor v Dusko Tadic*, Case No. IT-94-1-A (15 July 1999), para 94; Dinstein, Y. (2010), p. 45-46.

³⁹² *Public Prosecutor v. Koi et al.* (1967), (1968] AC 829; Dinstein, Y. (2010), p. 46-47.

³⁹³ Dinstein, Y. (2010), p. 43.

AP I is, however, controversial as it widens the scope of persons who are entitled to PoW-privileges.³⁹⁴ AP Article 44(3) stresses the well-established principle that “in order to promote the protection of the civilian population from the effects of hostilities, combatants are obliged to distinguish themselves from the civilian population while they are engaged in an attack or in a military operation preparatory to an attack.” However, it goes on to recognize that “there are situations in armed conflicts where, owing to the nature of the hostilities an armed combatant cannot so distinguish himself, he shall retain his status as a combatant, provided that, in such situations, he carries his arms openly.” As Article 44(3) has met resistance from states as it arguably dilutes the principle of distinction, it is not recognized as customary law and thus only binding for states contracting to AP I. However, the contracting states are bound to this approach, and their AWS must be able to assess these additional criteria in a military operation, either through programming, human control or artificial intelligence.

The importance of an obligation that demands objectively visible distinction between combatants and civilians is perhaps stronger than ever now that asymmetric warfare has become normality. This is especially important as the attacking state is only obliged to use “reasonable judgment in the circumstances” when the operator or/and the AWS proceed in order to carry out an attack and thus needs to apply the distinction principle.³⁹⁵ If it is not easy to distinguish civilians from combatants, the threshold may lower before it is reasonable to engage in an attack.

4.4.1.1.3. The issue concerning civilians directly participating in hostilities

According to AP I Article 51(3), which is recognized as customary law,³⁹⁶ civilians are afforded the protection provided by IHL “unless and for such time as they take direct part in hostilities”³⁹⁷ (from now on referred to as the DPH-rule). The rule implies that civilians must refrain from taking part in hostilities in order to enjoy the protection provided by IHL. On the contrary, IHL allows an adversary to target civilians that are DPH in addition to regular combatants.

³⁹⁴ Dinsten, Y. (2010), p. 51-55.

³⁹⁵ Anderson, K., Reisner, D. and Waxman, M., *Adapting the Law of Armed Conflict to Autonomous Weapon Systems*, International Law Studies, U.S. Naval War College (90 Int'l L. Stud. 386 (2014)), p. 401.

³⁹⁶ ICRC CIHL Study Rule 6, p. 22; Solis, G. (2010) p. 539.

³⁹⁷ AP I Article 51(3).

The term "direct participation in hostilities" is generally understood as "acts of war which by their nature or purpose are likely to cause actual harm to the personnel and equipment of the enemy armed forces."³⁹⁸ However, international actors disagree about the scope of the terms "direct participation" and "for such time", and consequently how the norm should be applied.³⁹⁹

A point of departure is, however, the ICRC Interpretive Guidance on the Notion of DPH under IHL.⁴⁰⁰ According to the ICRC, the action of a civilian must meet three cumulative requirements in order to qualify as direct participation in hostilities:

1. "The act must be likely to adversely affect the military operations or military capacity of a party to an armed conflict or, alternatively, to inflict death, injury, or destruction on persons or objects protected against attack (threshold of harm), and
2. There must be a direct causal link between the act and the harm likely to result either from that act, or from a coordinated military operation of which that act constitutes an integral part (direct causation), and
3. The act must be specifically designed to directly cause the required threshold of harm in support of a party to the conflict and to the detriment of another (belligerent nexus)."⁴⁰¹

A clear example of "acts of war" that amounts to DPH is where civilians use means of warfare "to commit acts of violence against human or material enemy forces,"⁴⁰² for instance in cases where a civilian conducts – or intends to conduct – armed attacks through an UAV.⁴⁰³ However, the term "acts of war" goes beyond mere violent conduct.⁴⁰⁴ In the word of the

³⁹⁸ Commentary on the APs, p. 619; The Inter-American Commission on Human Rights, Third report on human rights in Colombia, para 811; ICRC CIHL Study Rule 6, p. 22.

³⁹⁹ Dinstein, Y. (2010), p. 146.

⁴⁰⁰ *Interpretive Guidance on the Notion of Direct Participation in Hostilities under International Humanitarian Law*; Commentary on the HPCR Manual, p. 120; J.A. Sannem and E.A. Skøyeneie (2016), *Jussens treghet og teknologiens femmilssteg*. Contribution in T.A.S. Berntsen, G.L. Dyndal and S.R. Johansen, *Når dronene våkner: Autonome våpensystemer og robotisering av krig*, Cappelen Damm AS 2016 (1. utgave, 1. opplag), p. 126.

⁴⁰¹ *Interpretive Guidance on the Notion of Direct Participation in Hostilities under International Humanitarian Law*, p. 46.

⁴⁰² ICRC CIHL Study, Rule 6, p. 23.

⁴⁰³ Dinstein, Y. (2010), p. 151.

⁴⁰⁴ Dinstein, Y. (2010), p. 150.

ICRC, the act reaches the threshold if it is "likely to affect adversely military operations or military capacity."⁴⁰⁵ An example is the loading of bombs onto a military aircraft that is about to engage in hostilities.⁴⁰⁶

Moreover, the act must qualify as a direct cause to the actual or intended harm. What is decisive is whether it is likely that the act in question "is brought about in one causal step",⁴⁰⁷ also where the act only cause the harm "in conjunction with other acts."⁴⁰⁸ On the contrary, indirect participation in hostilities is not sufficient to qualify as "acts of violence which pose an immediate threat of actual harm to the adverse party."⁴⁰⁹ Examples of such indirect participation may be the "selling of goods to one or more of the armed parties, expressing sympathy for the cause of one of the parties [...] failing to act to prevent an incursion by one of the armed parties"⁴¹⁰ or merely developing the software meant for an AWS.⁴¹¹ Moreover, the Commentary on the HPCR Manual describes acts below the threshold as those

"that merely build or maintain the capacity of a Belligerent Party to harm its adversary in unspecified future operations [...] even if they are connected to the resulting harm through an uninterrupted chain of events or are indispensable to its causation".⁴¹²

Finally, the civilian has to act with an aim to support a party of the conflict to the other party's disadvantage. According to the HPCR Manual, this "relates to the objective purpose and design of an act or operation as part of the conduct of hostilities and does not depend on the subjective mindset or intent of every participating individual."⁴¹³

Various scholars have sought to identify the role civilians may play in relation to AWS. According to Boothby, civilian personnel may be involved in "planning the mission, in pre-sorting servicing of the platform, in loading the platform with mission essential data, fuel, and

⁴⁰⁵ *Interpretive Guidance on the Notion of Direct Participation in Hostilities under International Humanitarian Law*, p. 46;

⁴⁰⁶ *Interpretive Guidance on the Notion of Direct Participation in Hostilities under International Humanitarian Law*, p. 66; Commentary on the HPCR Manual, p. 120; Dinstein, Y. (2010), p. 150.

⁴⁰⁷ Commentary on the HPCR Manual, p. 120.

⁴⁰⁸ *Ibid.*

⁴⁰⁹ Inter-American Commission on Human Rights, *Third report on human rights in Colombia*, para 811.

⁴¹⁰ *Ibid.*

⁴¹¹ Sannem, J.A. and Skøyeneie, E.A. (2016), p. 126.

⁴¹² Commentary on the HPCR Manual, p. 120

⁴¹³ Commentary on the HPCR Manual, p. 120-121.

ordnance, in moving the platform to the place from which it deploys or is launched, in developing the software that the platform uses for navigation and target recognition and in feeding into the platform the characteristics of the target of which it is to search and the area where it is to search."⁴¹⁴

According to Sannem and Skøyeneie, one can assume that the programming of an AWS amounts to DPH.⁴¹⁵ This contention corresponds with the HPCR Manual Rule (xi), which holds that "[l]oading mission control data to military aircraft/missile software systems" is an example of an act which may qualify as DPH.⁴¹⁶ Moreover, the HPCR Manual identifies the acts of "engaging in mission planning of an air or missile attack"⁴¹⁷ and "operating or controlling weapon systems [...] in air or missile combat operations, including remote control of UAVs and UCAVs".⁴¹⁸ Thus, a temporal or geographic proximity is not necessary in order for an act to qualify as DPH.⁴¹⁹

However, the topic discussed in this section is highly controversial, and, as the HPCR Manual points out, the criteria established by the ICRC Interpretive Guidance are not customary law. It nevertheless seems safe to conclude that civilians who play a crucial role in the preparation, programming or operation of an AWS during a military operation against an adversary will be regarded as DPH and thus lose their protection.

4.4.1.2. *Compliance with the principle of proportionality when an attack is conducted with autonomous weapon systems*

The proportionality principle provides a further restriction upon the adversaries in cases where the armed forces have identified a military objective, but where there is a risk of incidental civilian losses or damage to civilian property.⁴²⁰ Although none of the IHL treaties contain a statutory definition of the principle, it is reflected in, *inter alia*, AP I Articles 51(5)(b) and 57(2)(iii). According to these provisions, the following conduct is prohibited due to the proportionality principle:

⁴¹⁴ Boothby, W. (2014), p. 273.

⁴¹⁵ Sannem, J.A. and Skøyeneie, E.A. (2016), p. 126.

⁴¹⁶ HPCR Manual, Section F Rule 29 (xi).

⁴¹⁷ HPCR Manual, Section F Rule 29 (v).

⁴¹⁸ HPCR Manual, Section F Rule 29 (vi).

⁴¹⁹ Commentary on the HPCR Manual, p. 122.

⁴²⁰ Dinstein, Y. (2010), p. 129.

"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."⁴²¹

As the term 'proportionality' suggests, the consideration requires some sort of balancing between two needs. These are, on the one side, the need to eliminate a lawful military objective, which is a justified act of war. On the other side, there is the need to protect civilians to the degree required by IHL. The principle is codified in treaty provisions and have status as customary law.⁴²²

The question that must be assessed before a military engagement is thus whether the civilian losses or damages to property will be disproportionate in comparison with the expected military advantages. The key consideration is whether the harm to civilians is "excessive". This notion invites to an interpretation which is largely left to those planning an attack.⁴²³ As the term does not have a clearly limited scope, it is consequently open to subjective assessment and balancing.⁴²⁴ Furthermore, the military enjoys a wide margin of appreciation because of the prognostic character of the assessment.⁴²⁵

Although the proportionality test is accepted as customary law, the above-mentioned observations related to the principle of precautions in attack and the distinction principle indicate that its substantive content varies to a large extent due to the interpreter. Thus, the outcome of the assessment is not objectively predictable.

This may be different if the adversaries use pre-programmed AWS, in so far the parameters are sufficiently advanced. States could for instance minimize the incidental harm if they programmed the AWS to cancel or suspend an attack if it, through implemented sensors, were able to calculate that a number of people surrounding a military objective which exceeded a pre-programmed number of accepted casualties.

⁴²¹ AP I Article 51(5)(b).

⁴²² ICRC Study CIHL, Rule 14; Dinstein, Y. (2010), p. 129; Corn, G. et al. (2012), p. 124.

⁴²³ Fleck (2013), p. 197; US Military Manual p 245 para 5.12.4., which is stating that "[t]he weighing or comparison between the expected incidental harm and the expected military advantage does not necessarily lend itself to empirical analyses".

⁴²⁴ Fleck (2013), p. 197.

⁴²⁵ Ibid.

Moreover, if the AWS is equipped with sensors and is able to fly low and loiter over an area for a longer time, it may be able to gather valuable information about the target enabling the AWS to identify both the signature of the target and, if it is a combatant, his or hers movement pattern. Thus, the AWS could be able to time an attack and avoid civilian casualties to a larger extent than a human, especially in IACs where the adversary is easily distinctive from civilians due to uniform and emblems.

4.5. Conclusion

Lawful use of AWS presupposes that the target process is subject to meaningful human control and that the programmer/those in charge of an attack ensure that the AWS conducts its mission in compliance with the relevant rules of IHL and IHRL – hereunder to identify the target and ensure that it is a military objective.⁴²⁶

The decision to attack is not taken in the moment by an operator. Therefore, the employment of AWS may pose new challenges in regard of planning and the incidental targeting process. For instance, a common feature to all the obligations within the principle of precautions in attack is that they rely on subjective judgment. The three most imminent principles, which AWS are also less likely to comply with without human intervention and oversight, are the principles of military necessity/advantage, distinction and proportionality. Thus, international actors conclude that a human must take the required precautions and have meaningful control over the AWS' behavior during a military operation in order to comply with the principles of distinction and proportionality.⁴²⁷ This seems to be coherent with the view of the U.S. as well as other states, since existing AWS are not capable to apply IHL without human pre-programming and/or intervention during military operations.

In order to prevent that the development of advanced technology runs afoul with IHL and to secure compliance with the relevant rules, states ought to scrutinize AWS in a detailed and effective manner. IHL contains a rule which obliges states to do so, which will be the subject under examination in the next chapter.

⁴²⁶ Commentary on the APs, p. 680 para 2194.

⁴²⁷ Johansen, S. R. and Slensvik, T. (2016), p. 152-153.

5. The obligation to conduct weapon reviews

Although IHL mainly applies after armed conflict has broken out, some of the rules of IHL oblige the states to implement procedures and initiate measures in peacetime. One example is weapons review under AP I Article 36, which states as follows:

"In the study, development, acquisition or adoption of a new weapon, means or methods 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."

The rule is binding upon all the 174 parties to AP I,⁴²⁸ and is arguably customary international law as well. Although there is not comprehensive state practice to support this view,⁴²⁹ some legal experts argue in this direction.⁴³⁰ According to Boothby, the St. Petersburg Declaration from 1868 indicated that states ought to conduct a weapons review due to the following wording:

“The Contracting or Acceding Parties reserve to themselves to come hereafter to an understanding whenever a precise proposition shall be drawn up in view of future improvements which science may effect in the armament of troops, in order to maintain the principles which they have established, and to conciliate the necessities of war with the laws of humanity.”⁴³¹

Furthermore, Hague Convention IV Article 1 states that “[t]he Contracting Powers shall issue instructions to their armed land forces which shall be in conformity with the Regulations respecting the laws and customs of war on land.”⁴³² As mentioned above, Article 23(e) in this convention prohibits the employment of weapons “calculated to cause unnecessary suffering.” Hays Parks – as cited by Boothby – concludes that “states have a general duty to engage in good faith performance of their treaty obligations and that '[t]his would have included a duty

⁴²⁸ See the overview of state parties here: <https://www.icrc.org/ihl/INTRO/470> (last entered May 3, 2016).

⁴²⁹ Boothby (2014), page 171.

⁴³⁰ According to Boothby, it is "highly likely" that this is the case, see Boothby (2014), p. 170-171.

⁴³¹ Declaration Renouncing the Use, in Time of War, of Explosive Projectiles Under 400 Grammes Weight. Saint Petersburg, 29 November/11 December 1868, Preamble, final passage.

⁴³² Hague Convention (IV) respecting the Laws and Customs of War on Land and its annex: Regulations concerning the Laws and Customs of War on Land, The Hague, 18 October 1907.

to ensure [that] military weapons and munitions complied with the Hague Convention IV and obligations contained in other treaties.”⁴³³ Furthermore, the ICRC has stated a similar view. In a weapons review guide from 2006,⁴³⁴ the organization held that “[t]he requirement that the legality of all new weapons, means and methods of warfare be systematically assessed is arguably one that applies to *all* States, regardless of whether or not they are party to [AP I]”. The faithful and responsible application of its international law obligations would require a State to ensure that the new weapons, means and methods it develops or acquires will not violate these obligations.⁴³⁵ As mentioned in section 1.2.1, states must interpret their treaty obligations in good faith. In this respect, it seems reasonable to assume that compliance with rules prohibiting or restricting weapons demands that states make sure that weapons in their arsenal are lawful and whether their use is somehow restricted.

According to the Commentary, Article 36 was codified “with a primary concern directed towards the technological development of armaments.”⁴³⁶ The drafters also stressed that Article 36 – together with the CCW and the Hague Regulation – were “the only instrument in the law of armed conflict that [could] act as a brake on the abuses resulting from the arms race or on the possibility of future abuses”.⁴³⁷ In addition, the drafters alerted that “[t]he use of long distance, remote control weapons, or weapons connected to sensors positioned in the field, leads to the automation of the battlefield in which the soldier plays an increasingly less important role.”⁴³⁸ As weapons are increasingly equipped with automatic and autonomous features, their presumption has proven to be right. Consequently, the relevance of Article 36 is perhaps larger than ever, and the importance of its obligation should not be overseen by contracting states.

⁴³³ Hays Parks (2005), p. 55-57 as cited by Boothby (2014), p. 170-171.

⁴³⁴ Lawand, K., Coupland, R. and Herby, P. (2006), *A Guide to the Legal Review of New Weapons, Means and Methods of Warfare: Measures to Implement Article 36 of Additional Protocol I of 1977*, Geneva: International Committee of the Red Cross.

⁴³⁵ Lawand, K., Coupland, R. and Herby, P. (2006), *A Guide to the Legal Review of New Weapons, Means and Methods of Warfare: Measures to Implement Article 36 of Additional Protocol I of 1977*, Geneva: International Committee of the Red Cross. page 933.

⁴³⁶ Commentary on the APs, page 428 paragraph 1478.

⁴³⁷ Commentary on the APs, page 427 paragraph 1475.

⁴³⁸ Commentary on the APs, page 427 paragraph 1476. The Additional Protocols and the Commentary were written in a time where some states started to deploy UAVs. For instance, Iran performed the first known use of UCAVs in the Iran-Iraq war in the 1980s, see Fariborz Haghshenass, *Iran's Asymmetric Naval Warfare*, Washington Institute for Near East Policy (Policy Focus #87, September 2008), page 17.

The subjects of review, namely "weapons, means and methods of warfare", are not defined in neither AP I nor the Commentary. The terms must be seen in relation to IHL as a whole, and interpreted in a way that promote the provision's object and purpose.

5.1. Application of Article 36

The obligation to determine whether the employment of a new weapon, means or method of warfare is prohibited under IHL applies once a state begins to study, develop, acquire or adopt one of the above mentioned. Here, the notion "new" does not mean that the weapon, mean or method in question must be new in a technical sense – it suffices that it is new in relation to the arsenal of a contracting state.⁴³⁹

According to the Commentary, activation of Article 36 requires more than a mere study of technology that perhaps will become weaponized. Since the line between a study of technology and a study of a mean of warfare can be difficult to draw, Boothby suggests that this depends on "when particular kinds of weaponisation are first being considered or evaluated."⁴⁴⁰

Development of means or methods of warfare includes "the application of materials, equipment and other elements to form a weapon", while "acquisition and adoption [of means of warfare] involve obtaining weapons from commercial terms, as a gift, or under any other form of transaction."⁴⁴¹ In regard of methods of warfare, "adoption" refers to a state's decision to employ a certain weapon or method in armed conflict.⁴⁴²

According to the Commentary, the objective of Article 36 is to oblige states to review whether the normal or expected use of weapons may be restricted or prohibited. Mere possession in itself will arguably not activate Article 36.⁴⁴³ It is, however, hard to imagine that a state which possesses a weapon will never use it; as shown in the *Nuclear Weapons* case, states are probably not prohibited from using nuclear weapons in extreme cases of self-defence. Although self-defence is generally connected to the *jus ad bellum*-paradigm, the use

⁴³⁹ Commentary on the APs, page 425 paragraph 1472.

⁴⁴⁰ Boothby, W. (2014), page 109.

⁴⁴¹ Ibid.

⁴⁴² Ibid.

⁴⁴³ Commentary on the APs, page 425 paragraph 1469 and 1471.

of force must “also meet the requirements of the law of armed conflict which comprise in particular the principles and rules of humanitarian law.”⁴⁴⁴ Hence, if a state equips itself with controversial weapons as, for instance, a method of deterrence, it ought to examine its legality to ensure compliance with Article 36 and IHL in general. Such an obligations follows from the wording of Article 36 as well: At one point, the state must necessarily either study, develop, acquire or adopt the weapon. Consequently, Article 36 is activated.

5.2. The obligation to determine the legality of autonomous weapon systems

Once the above mentioned requirements are fulfilled, the question is how states ought to conduct the review and determine the legality of new weapons, means and methods of warfare. Article 36 contains little information as to *how* states actually ought to conduct the weapon review. There are, however, some leads. For instance, contracting parties must consider whether the subject is prohibited "in all or some circumstances" by any applicable international law. Hence, it is likely that the drafters wanted the states to undertake a broad examination of their new weapons, means and methods of warfare.

Moreover, the Commentary clarifies that "the determination is to be made on the basis of normal use of the weapon as anticipated at the time of evaluation."⁴⁴⁵ Such a rule harmonizes with the contention that IHL “prohibits the design, modification, or employment of a weapon for the *purpose* of increasing or causing suffering beyond that required by military necessity.”⁴⁴⁶ This point is especially relevant in relation to weapons and means of warfare, as there is an unavoidable possibility that states may use them in an unlawful manner.

The Commentary also explains that the provision "implies the obligation to establish internal procedures for the purpose of elucidating the issue of legality."⁴⁴⁷ There are no descriptions as to how these internal procedures ought to be conducted, so the states are given much leeway when they perform the review. As far as I am aware, only six states have established such internal procedures.⁴⁴⁸ Thus, the state practice is not sufficient in order to establish a

⁴⁴⁴ *Nuclear Weapons* case, para. 42.

⁴⁴⁵ Commentary on the APs, page 423 paragraph 1466.

⁴⁴⁶ Corn et.al. (2012), p. 204.

⁴⁴⁷ Commentary on the APs, paragraph 1470 and 1482.

⁴⁴⁸ The respective states are Australia, Belgium, the Netherlands, Norway, Sweden and the U.S., see Lawand, K., Coupland, R. and Herby, P. (2006), *A Guide to the Legal Review of New Weapons, Means and Methods of*

customary rule demanding specific forms of review or procedures that must be adopted in this regard.⁴⁴⁹

The U.S. provides an example of such an internal procedure. Here, legal experts carry out an examination on a national level, which in turn allows the armed forces to assume that the weapon or munition in use is legal in this particular aspect.⁴⁵⁰ These experts determine whether a mean of warfare violates the prohibition of weapons causing unnecessary suffering through an examination of “the doctrine and instructions for its employment and the effects intended to be (and actually) produced.”⁴⁵¹ The weapon or munition in question “must be examined against comparable weapons in use on the modern battlefield, their effects on combatants, *and* [its] military necessity.”⁴⁵² Norway has a similar procedure, although there are no examples on conducted reviews that are available.⁴⁵³

According to Article 36, the state ought to determine whether a weapon, mean or method of warfare is prohibited under API or "by any other rule of international law applicable to the High Contracting Party." The question is whether a prohibition can be deduced from human rights law, either solely or seen together with international humanitarian law.

As already mentioned, states ought to conduct a broad examination of the legality of a subject. However, human rights obligations were written with an eye on the law enforcement paradigm, and not the conduct of hostilities paradigm.⁴⁵⁴ One can perhaps argue on this basis that it was not the ordinary meaning of Article 36 to imply human rights law in the evaluation of weapons, means and methods of warfare. Yet, it is generally accepted that human rights continues to apply during armed conflict. Thus, a dynamic approach to the object and purpose of Article 36 may suggest that the review must include relevant human rights as well. For instance, Heyns holds that autonomous weapon systems may "pose new threats to the right to

Warfare: Measures to Implement Article 36 of Additional Protocol I of 1977, Geneva: International Committee of the Red Cross, p. 5.

⁴⁴⁹ Boothby, W. (2014), page 171.

⁴⁵⁰ Corn et.al. (2012), p. 204.

⁴⁵¹ Ibid.

⁴⁵² Ibid.

⁴⁵³ Direktiv om folkerettslig vurdering av vapen, krigforingsmetoder og krigforingsvirkemidler, (Directive on the Legal Review on Weapons, Methods and Means of Warfare), Ministry of Defence, 18 June 2003.

⁴⁵⁴ Fleck, D. (2013), p. 72.

life."⁴⁵⁵ Moreover, some argue that such weapon systems will probably not be able to meet the requirements of neither humanitarian- nor human rights law, and that in any case; they should not be given the power to take life-or-death decisions.⁴⁵⁶

However, the Commentary explains that the clause "any other rule of international law" refers to "any agreement related to the prohibition, limitation or restriction on the use of weapon or a particular type of weapon, concluded by this Party, which would relate, for example to a new generation of small caliber weapons or any other type of weapons."⁴⁵⁷ In addition, customary rules are included.⁴⁵⁸ If we take the Commentary by its wording, it seems that the reference to other rules of international law is reserved to weapons law and law of targeting. Such an interpretation implies that the states must only assess humanitarian law. However, as human rights increasingly become an integral part of humanitarian law, I will not exclude the possibility that states may be obliged to evaluate human rights law in certain circumstances.

5.3. Preliminary conclusion: Review of autonomous weapon systems

Article 36 is clearly important when assessing of the legality of AWS. This has come to show due to the CCW Meetings of Experts on LAWS in 2014, 2015 and 2016. In the 2015 meeting, the discussion of Article 36 was placed under the heading "Possible challenges to IHL"⁴⁵⁹ and introduced by William H. Boothby. Under his presentation, he stressed that "[t]he legal duty is to check that the planned use of the weapon or method will comply with all of the international law rules binding upon [the parties to AP I]". Thus, a state that plans to manufacture or purchase⁴⁶⁰ AWS must assess whether the planned use of the weapon is legal before they deploy it. Consequently, if such review is not undertaken, the state will be responsible where the weapon causes wrongful damage.⁴⁶¹

⁴⁵⁵ Heyns, C., *Report of the Special Rapporteur on extrajudicial, summary or arbitrary executions*, A/HRC/23/47, April 2013, para 30.

⁴⁵⁶ Heyns, C., *Report of the Special Rapporteur on extrajudicial, summary or arbitrary executions*, A/HRC/23/47, April 2013, para 31.

⁴⁵⁷ Commentary on the APs, para 1472.

⁴⁵⁸ Ibid.

⁴⁵⁹ The program of the CCW Meeting of Experts on Lethal Autonomous Weapon Systems at the United Nations Office at Geneva's official webpage:

[http://www.unog.ch/_80256ee600585943.nsf/\(httpPages\)/6ce049be22ec75a2c1257c8d00513e26?OpenDocument&ExpandSection=3#_Section3](http://www.unog.ch/_80256ee600585943.nsf/(httpPages)/6ce049be22ec75a2c1257c8d00513e26?OpenDocument&ExpandSection=3#_Section3) (last entered 16 December 2015).

⁴⁶⁰ Commentary on the APs, page 426 paragraph 1473.

⁴⁶¹ Commentary on the APs, page 423 paragraph 1466.

6. Final remarks

The common international position seem to be that AWS in general are legal means of warfare. However, as current AWS do not contain such levels of complexity, there seem to be agreement among international actors that the engagement must have some sort of meaningful human control in order to ensure compliance with the relevant rules. However, there are no existing authoritative agreement on the notion of human control, and thus the constraint is vulnerable to changes in the states' will to comply with it. Furthermore, technology is steadily advancing and human control will perhaps not be necessary if AWS become sufficiently intelligent to comply with IHL autonomously.

States are addressing the issues related to AWS through the CCW Expert Meetings, and the dialogue has lasted for three years now. Whether the discussions will result in an agreement is a question beyond my knowledge, but the topic is at least put on the agenda and states share their views and experiences. Thus, the technological development does not progress in a vacuum.

Furthermore, there will be challenges in the future relating to many aspects of AWS. Some are addressed in this thesis, like the question of extraterritorial application of human rights obligations and whether the use of AWS may be in violation of the prohibition against inhuman or degrading treatment. Moreover, there are issues related to the relationship between humans and AWS when it comes to proper identification of military objectives and thus lawful targets. These issues should be properly addressed through a weapons review by every state who is considering to take AWS into their arsenal.

Moreover, other topics are relevant if the human is taken out of the loop. For instance, one may have to consider whether FAWS with AI should be regarded as independent legal subjects under IHL, and thus have the same duties and entitlements as combatants.

Furthermore, questions concerning responsibility for acts or omissions conducted by AWS deserve a throughout examination. Although I have not addressed these issues in this thesis, they are suitable for further analysis.

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