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Faculty of Law

## **Autonomous Weapons Systems: The ICRC's recommendations and its implications for International Humanitarian Law**

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## Abbreviations

AI	Artificial Intelligence
AWS	Autonomous Weapon Systems
CCW	The Convention on Certain Conventional Weapons
EU	European Union
HRW	Human Rights Watch
ICRC	International Committee of the Red Cross
IHL	International Humanitarian Law
LAWS	Lethal Autonomous Weapon Systems
LOAC	Law of Armed Conflict
NGO	Non-Governmental Organization
ROE	Rules of Engagement
SKR	Stop Killer Robots
TEU	Treaty on the European Union
UK	The United Kingdom
US	The United States of America

# 1 Preface

The International Committee of the Red Cross is a humanitarian organisation. They protect and assist victims of armed conflict, including civilians, prisoners of war and the wounded. Within the Red Cross, the ICRC is central body the national societies are led by in conflict areas.<sup>1</sup>

The ICRC also safeguard and spread knowledge of international humanitarian law; The rules and how they limit the effects of armed conflict.<sup>2</sup> It recognises the need for adaption and adjustment of IHL to keep up with the changing theatres of war, including the challenges of technological advancements.<sup>3</sup>

**In this thesis**, the ICRCs position and recommendations on autonomous weapon systems will be examined, as well as how these recommendations relate to and intersects with IHL. As an initial understanding, an AWS can be described as a weapon system capable of acting at least in part without human interaction.<sup>4</sup>

The goal of the thesis is to gain an understanding of the legal landscape and the impact treaty and customary IHL has on this technology. The main questions relate to the use and, to a lesser extent, the development of AWS. This necessitates a baseline understanding of what an AWS is, what differentiates them from a conventional weapons, and some of the challenges unique to AWS.

As the tasks and purpose of the ICRC intersect with all these subjects, the legal significance of their recommendations is of interest. How the recommendations differ from current IHL affecting AWS is also a crucial part of the thesis.

To what degree the ICRCs recommendation on AWS can be used to shape the discussion and legislation on AWS, and to what degree it seems likely for the ICRCs recommendation to effect IHL surrounding AWS will also be topics of discussion.

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<sup>1</sup> ICRC, What is the ICRC's relationship with national Red Cross and Red Crescent societies?, 2012

<sup>2</sup> Handbook of the International Red Cross and Red Crescent Movement 14th edition, page 523 – 524, Article 5.

<sup>3</sup> ICRC, The ICRC's Mandate and mission, 2022a.

<sup>4</sup> For a more comprehensive definition see Part 4.6, Forming a working definition.

## 1.1 Actuality

The legality of AWS and the need for codification has been on the agenda of the parties to the Convention on Certain Conventional Weapons for an extensive period of time.<sup>5</sup> The issue has also been discussed extensively in the UN, the EU and in meetings between large military and financial powers, with a view to resolve the controversies surrounding them.

Along with the responsibilities given under the Geneva Conventions, the ICRC is one of the most important actors within IHL.<sup>6</sup> Their role has been described as that of a guardian of IHL.<sup>7</sup>

In the “ICRC Position on Autonomous Weapon Systems”, published 17 May 2021, the ICRC brought AWS to the forefront of the agenda.<sup>8</sup> The special consideration for the ICRC’s expert opinions, due to their connection to the Geneva Conventions, is the main reason the ICRCs position and recommendations on AWS will be used as the basis for discussions in this thesis.

## 1.2 Limitations

Although IHL is a major part of the thesis, general humanitarian law will not be examined. The closely related area of law known as *jus ad bellum* will also not be dealt with. Detailed descriptions on the impact of specific customary rules and treaty law is beyond the scope as well.

The rules examined will be equally important for both international and non-international conflict through customary law. However, the finer details of AWS use in specific conflict types will not be handled, such as naval altercations.

The designation “IHL” will be used even where other authors might use the synonyms Law of Armed Conflict or *jus in bello*. The term AWS will primarily be used for all such systems, however the term “Lethal Autonomous Weapon Systems” or “LAWS” will be used when appropriate.

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<sup>5</sup> The Convention on Certain Conventional Weapons, 10 oct 1980.

<sup>6</sup> The statutes are reproduced in the Handbook of the International Red Cross and Red Crescent Movement 14th edition, Page 561-592.

<sup>7</sup> Y Sandos, The International Committee of the Red Cross as guardian of international humanitarian law, 1998.

<sup>8</sup> ICRC position on autonomous weapon systems, 2021

### 1.3 Methodology and Sources

There is no universally established methodical structure or common institutions which can enforce such a common methodology within IHL.<sup>9</sup> This lack of commonality and universal enforceability is a consequence which follows the principle of all states being sovereign within their territory, and their legal positions being of equal weight on the international stage.<sup>10</sup> Therefore, the methodological approach will be different from how similar questions would be resolved within national law.

International law in general works on a horizontal plane with no hierarchy of sources, the exception being *jus cogens* which is compelling.<sup>11</sup> Court decisions and the opinion of legal scholars are in a larger extent seen as exclusively interpretive tools than what is common in national law. In regard to treaties, the Vienna Convention of 1969 gives some rules for how they should be interpreted and it is generally regarded as customary law.<sup>12</sup> This creates the basis of treaties having to be interpreted in “good faith”. An important note is that despite this more horizontal solution it is common for the statutes of the ICJ to be recognised as a source of hierarchy within IHL.<sup>13</sup>

With these methodological limitations customary law is of great importance for the realm of IHL. Once there is “... evidence of a belief that this practice is rendered obligatory by the existence of a rule of law requiring it.”<sup>14</sup> That principle or practice will be considered customary law, and applies to all states regardless of their expressed support of those principles. It further requires that customary law is reflective of the states actual conduct.<sup>15</sup> This sets a clear divide of customary rules and treaties.

The rules given through treaties, with some exceptions where the treaty has achieved customary status, means that only those states party to a treaty is bound by it. Of note is the fact that large concordance for one treaty will not in itself be enough to grant customary

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<sup>9</sup> M N Shaw, *International Law*, Cambridge University Press, 2014, Page 49.

<sup>10</sup> M N Shaw 2014, Page 4.

<sup>11</sup> A Cassese, *International Law*, Oxford University Press, 2005, page 198 – 199.

<sup>12</sup> Vienna Convention on the Law of Treaties (VCLT), 23 May 1969, Article 31 – 32.

<sup>13</sup> Statute of the International Court of Justice, 24 October 1945, Article 38.

<sup>14</sup> ICJ, *North Sea Continental Shelf Cases*, ICJ Reports, Judgement of 20 February 1969, Paragraph 77.

<sup>15</sup> W H Boothby, *The Law of War*, Cambridge University Press 2018, Chapter 3, Status of the Parties and the Law of War; A Cassese 2005, Page 156 – 157.

status.<sup>16</sup> Widely accepted treaties can over time become customary law, but this generally requires no other states to actively oppose it as can be seen with the API.<sup>17</sup> Parts of which is indisputably customary law, while other sections are disputed and therefore has not achieved customary status.

With AWS not being regulated in any direct manner by treaty or customary law, some methodological challenges present themselves. In determining what an AWS is in the legal context of IHL, as well as resolving issues relating to the weighting of differing opinions from a variety of academic fields. The general lack of publicly available details surrounding military tech means that, to a degree, the analysis is restricted to such information as can be publicly accessed and the conclusions possible to extrapolate through this. There is also a limited amount of literature available on the topic, especially in regards to legal literature. In combination with the methodological challenges of IHL. This means that legal theory to a larger extent could be informed by the opinions of the author, which at times can lead to discussions of reliability. However with the limited literature available it can be challenging to find opposing views to compare the literature with.

To resolve these challenges as well as the lack of clear legal methodology, the dogmatic legal methodology will be used as the primary legal method for interpreting the issues raised within this thesis, seeking to, as far as possible, find a working solution to the challenges presented.

## **1.4 Structure of the Thesis**

In part two of the thesis, the ICRCs position and recommendations will be presented and given a brief analysis of what each individual part of their recommendations entail. Thereafter part three will seek to clarify the current state of IHL as it relates to AWS.

Part four will examine some of the uncertainty related to the question of what an AWS actually is and different definitions held by important actors within IHL, ending in an attempt at summarising a working definition for AWS.

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<sup>16</sup> The ICRC study on customary international humanitarian law, Cambridge University Press, 2005, can be an interesting source for customary law within IHL.

<sup>17</sup> Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), 8 June 1977



Part five will examine what weapon autonomy is, and why defining it is challenging. Parts six through eight will give a more in-depth view of the use of AWS under current IHL.

Part nine will circle back to specific points of the ICRC recommendations: Analysing if there already exists comparable limitations within IHL and, if not, to what degree implementing a recommendation could be possible. The tenth part will give a brief view of the feasibility of a ban and whether this is an outcome which is desirable for the nation states.

In the eleventh part of the thesis, a final summation and the authors view of what the likely outcomes of the ICRC recommendations could be will be given.

## 2 ICRC and AWS opinion

The ICRC recommendations on AWS will be referred to for guidance throughout the thesis. Given its importance it is reiterated in its entirety here:

“

1. **Unpredictable autonomous weapon systems should be expressly ruled out**, notably because of their indiscriminate effects. This would best be achieved with a prohibition on autonomous weapon systems that are designed or used in a manner such that their effects cannot be sufficiently understood, predicted and explained.
2. In light of ethical considerations to safeguard humanity, and to uphold international humanitarian law rules for the protection of civilians and combatants *hors de combat*, **use of autonomous weapon systems to target human beings should be ruled out**. This would best be achieved through a prohibition on autonomous weapon systems that are designed or used to apply force against persons.
3. In order to protect civilians and civilian objects, uphold the rules of international humanitarian law and safeguard humanity, **the design and use of autonomous weapon systems that would not be prohibited should be regulated**, including through a combination of:
  - **limits on the types of target**, such as constraining them to objects that are military objectives by nature
  - **limits on the duration, geographical scope and scale of use**, including to enable human judgement and control in relation to a specific attack

- **limits on situations of use**, such as constraining them to situations where civilians or civilian objects are not present
- **requirements for human–machine interaction**, notably to ensure effective human supervision, and timely intervention and deactivation. [sic]”<sup>18</sup>

The briefness of these recommendations, as well as the relatively short document in which they were originally presented, could indicate that the recommendations are not meant to give complete guidance. It seems more likely that its purpose was to help guide the discussion on the topic of AWS and potential regulation. The recommendations are not an expression of soft law or in any way binding for the states. At most it serves as an interpretive tool for IHL and customary principles. Although the special position of the ICRC means that their recommendations should likely be given more credence than an opinion from any other similar organisation.<sup>19</sup>

A more precise description and interpretation of each recommendation will be given below, before a clarification of the current state of IHL and AWS follows.

## **2.1 Unpredictable autonomous weapon systems should be expressly ruled out**

The first point of the recommendation targets AWS which are not sufficiently predictable. AWS, by their nature, are not new types of weapons. Rather, they can more accurately be described as new ways of controlling weapons.<sup>20</sup> This kind of weapons control is likely to make use of both pre-programmed commands, as well as some degree of deep learning.<sup>21</sup> As a result it is unlikely the systems will be used in ways that do not allow them at least some degree of freedom in the choice of targets within limitations set in the programming. The US has expressed a willingness to “pull the plug on any system that gets out of line.”<sup>22</sup>

It is in the nature of war to be unpredictable. Parameters change from day to day, or even minute to minute. As such, it will likely be impossible to design a weapon that will be

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<sup>18</sup> ICRC 2021.

<sup>19</sup> Y Sandos, *The International Committee of the Red Cross as guardian of international humanitarian law*, 1998;

<sup>20</sup> T McFarland, *Autonomous Weapons Systems and the Law of Armed Conflict*, Cambridge University Press, 2020, Page 51 – 52.

<sup>21</sup> See 5.2, *Deep Learning*.

<sup>22</sup> S Loosey, Austin: AI is crucial for military, but commanders will pull the plug on misbehaving systems, *Military.com*, 2019.

perfectly predictable in every situation. Military leaders will want the greatest degree of predictability for weapons, but it is likely not possible to achieve the desirable degree of predictability in all settings.<sup>23</sup> This is to a degree addressed in the wording, wherein it is clarified that they seek to target a ban on weapons which “... cannot be sufficiently understood...”.<sup>24</sup> It seems likely that a weapon using “Artificial Intelligence” which is not “sufficiently understood” prior to deployment would be seen as being in breach of IHL already, given the limitations on indiscriminate effect already in place.<sup>25</sup>

## **2.2 Autonomous weapon systems to target human beings should be ruled out**

This second point of consideration leans more into a recommendation in which the ICRC aims to hinder the use of AWS or LAWS against human targets. Although it is not explicitly stated, it should be assumed that this means human targets on their own, and not military objectives in which there could be humans. This proposal falls in line with the ICRC's other recommendations. In addition, the recommendation is similar in scope to other campaigns to limit or fully ban the use or development of AWS. An example of this is the “Stop Killer Robots” campaign.

The fear of AWS being directed at humans could be argued to be one of the driving forces of the campaigns opposing these systems. Further, there are many who are concerned with the ability of AWS to stay within the limitations of IHL and have given support to SKR.<sup>26</sup> The ethical concerns with respect to AWS are ever-present in their use, and the issue is by no means exclusive to the use against humans. However, it seems this is where the concerns carry the most weight, as protection of civilians and those deemed *hors de combat* are among the most important tenants of IHL. Ensuring compliance with these principles will undoubtedly be among the chief concerns of any military commander or government when it comes to the deployment of such weapons.

A counter argument to these concerns consists of the clear advantage AI has over humans in speed of processing information.<sup>27</sup> It is possible to imagine a situation in which an enemy

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<sup>23</sup> M T Klare, *Autonomous Weapons Systems and the Law of War*, Arms Control Today, 2019.

<sup>24</sup> ICRC 2021, Point 1.

<sup>25</sup> See Distinction, 3.3; See Deep Learning and the Black Box below, 5.2.

<sup>26</sup> Stop. Killer Robots, Our member organisations, 2022a.

<sup>27</sup> Z Kallenborn, *Applying arms-control framework to autonomous weapons*, Brookings, 2021.

combatant becomes *hors de combat*, but the human soldiers are unable to register this in the heat of combat. Either due to stress or a lack of ability to analyse what has happened at a sufficient speed to notice this change. However, an AWS could in theory notice this change within a very short span of time and disengage the target.<sup>28</sup> In the first scenario the enemy who is *hors de combat* is unlikely to survive, while in the second the chance of survival is, at least theoretically, significantly higher.

## **2.3 The design and use of autonomous weapon systems that would not be prohibited should be regulated**

The third recommendation concerns the design and use of AWS. The wish to achieve some form of international regulations of AWS, seems simple enough at a glance. There has been no real push by governments to create any regulations for AWS. The issue concerning lack of regulation has been brought up in the yearly meetings of the High Contracting Parties of the CCW, and in 2019 the CCW released 11 guiding principles for LAWS.<sup>29</sup>

The following points refer to the sub sections of the third recommendation and should therefore be read in context with what has been reviewed above.

### **2.3.1 Type of targets**

The first bullet point seeks to limit the targets to those only those military in nature. This would necessitate expanding the limitations already imposed on the use of weapons under current IHL. For the rules that apply today it is clear that before an objective can be targeted it needs to be military.<sup>30</sup> There is no doubt that military objectives are military targets and can be engaged. But even civilian objects can under certain circumstances be attacked.<sup>31</sup>

The proposal from the ICRC would change this, limiting the use of AWS to only those locations or objects that are military in nature, likely to be objects like military bases, battle ships and similar. With only limited knowledge of intent, it is hard to know what exactly the ICRC meant. The assumption would be that they would seek to exclude, as an example, civilian objects being used by combatants for temporary operations, such as schools, which would otherwise be characterised as military objects for the period occupied by the

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<sup>28</sup> T McFarland, 2020, page 37 – 44; CCW, 11 Guiding Principles on LAWS, 2019.

<sup>29</sup> Stop Killer Robots, Problems with autonomous weapons, 2022b.

<sup>30</sup> G. D. Solis, The Law of Armed Conflict, Cambridge University Press 2022, page 399.

<sup>31</sup> See 3.3, Distinction.

combatants.<sup>32</sup> While it seems clear that limiting the use of AWS in such a manner is likely to limit the potential for breaches of IHL, it seems unlikely that states would be willing to limit the use of this military technology to this extent.

### **2.3.2 Duration, geographical scope and scale of use**

The second bullet point seeks to limit the situations of use for AWS. All weapons of war are subject to limitations on use. These limitations can be imposed by their illegality, or by a limitation to the situations in which they legally can be employed in combat scenarios.<sup>33</sup> The scope of these limitations and their implications will be handled in more detail below.<sup>34</sup> With that in mind, the ICRC recommending a similar type of limitation for AWS is not without merit. The scope of the limitations proposed could be seen as far reaching, however depending on how a potential agreement were to be made it could easily be seen as unproblematic. A duration limitation could be to limit the use for a set amount of time after deployment. It could also be that AWS are limited in duration by the length of the specific mission it is deployed for. Similar arguments could be made for the other limitations mentioned in this bullet point. There is also the question regarding the possibility of limitations such as these already existing within IHL. However, even if that was to be the case, it would not serve as a barrier to an agreement imposing the same limitations specifically for AWS.

### **2.3.3 Situations of use**

In the third bullet point the recommendation sets out parameters for how AWS should be lawful to employ. A parallel between this suggestion of limiting use to situations where no civilian or civilian objects are present, and limitations that already exists in IHL is possible here. It is clear that in order to make use of armed force there has to be a level of certainty that in doing so only lawful targets will be engaged.<sup>35</sup> This recommendation appears to be an attempt at creating stricter criteria for the use of AWS than what is in place for most weapons today. Although that may not be the case, depending on interpretation.

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<sup>32</sup> Protocol Additional to the Geneva Conventions (Protocol I) 1997, art. 52 (2).

<sup>33</sup> CCW 1980.

<sup>34</sup> See Part 3, The current state of IHL.

<sup>35</sup> W H Boothby, *The Law of Targeting*, Oxford University Press 2012, Chapter 5, 5.2.

These questions will be examined in greater detail later, but for now it is sufficient to say that many of those same issues of use present themselves under the rules of distinction.<sup>36</sup> What exactly constitutes a military object is not a static definition and as such prohibiting the use of AWS to places where no civilian objects are present could prove challenging.

### **2.3.4 Requirements for human-machine interaction**

The fourth and final recommendation concerns the issue of human involvement when AWS are employed. There is no consensus definition as to what constitutes sufficient human interaction with AWS, or what exactly the rules regarding their use are. This recommendation falls in line with what most states already proclaim as their understanding of IHL.<sup>37</sup> There is, as will be shown later, a general consensus amongst nation states that all AWS require some form of human control. Most nations agree that “adequate human control” is needed.<sup>38</sup>

This means that the general consensus among nation states is that a requirement similar to this recommendation is already in place with current IHL. However, what nations mean with their interpretation is often very different from one another. Therefore, even though the consensus is that human control is regulated under IHL, there is clearly an argument to be made in regards to the need for a common understanding in order to clarify what exactly the rules governing AWS entail. What the ICRC seeks to achieve is likely a higher degree of control than some nations believe to be the case, and as such the recommendation is not without merit.

## **3 The current state IHL**

Two areas of IHL are of particular importance, these are often categorised as Weapons Law and Targeting Law. The question is how these customary principles, and limitations imposed by them, relate to AWS. What impact can they have on the recommendations of the ICRC, both in how they might affect a treaty inspired by the recommendations and what tools they contain to safeguard the goals of the recommendations.

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<sup>36</sup> See 8.3 Limits on types of targets.

<sup>37</sup> See 3 What are AWS.

<sup>38</sup> M Taddeo, A Blanchard, A Comparative Analysis of the Definitions of Autonomous Weapons, 2021, page 7.

### 3.1 General laws of prohibition of arms

There are several rules within IHL that prohibit the use of certain weapons and regulate the use of others.<sup>39</sup> It is also undisputable that certain types of AWS could fall within some of these categories. The more contentious issue relates to the fact that this cannot be said to be the case for all of them. There is therefore a need to establish an understanding of these rules as well as clarification of IHL norms as they are today.

With a lack of specific rules concerning the ban of AWS and LAWS reliance on the general IHL provisions regarding bans on weaponry is necessary. Such as the prohibition of use of weaponry that is incapable of distinguishing between combatants and civilians.<sup>40</sup> These indiscriminate weapons are prohibited, as well as the prohibitions on superfluous injury and unnecessary suffering.<sup>41</sup> This creates few different issues that need to be addressed. Any such weapon technology developed to be autonomous, either wholly or partially, especially if given the “freedom” to distinguish between different targets, would have to be able to distinguish between civilians and combatants. Additionally, they would need to be advanced enough to recognise when a combatant is no longer a valid target and should be considered *hors de combat*.

Compliance with the rules is easier in some areas than others, and the scope for using AWS will therefore also differ. For instance, in a naval context the degree of distinction is less of an issue. Any AWS would only be required to distinguish vessels which are valid, legal military targets, and those who are not. This would need to happen before any engagement happened, and with modern naval weaponry, would have to be done at a considerable distance.<sup>42</sup>

Distinguishing different vessels will likely always be challenging, but at a distance it is clear that the signature of a ship could be mistakenly identified as a valid target while belonging to a protected category.<sup>43</sup> This problem is not unique to AWS and humans could be susceptible to the same mistakes.

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<sup>39</sup> ICRC, Weapons, ICRC 2011.

<sup>40</sup> API 1997, Article 51 (4).

<sup>41</sup> See Proportionality, 3.4.

<sup>42</sup> T McFarland, 2020, Page 52.

<sup>43</sup> L Doswald-Beck, San Remo Manual on International Law Applicable to Armed Conflict at Sea, Cambridge University Press 1995, Art. 46.

Rules regarding mistakes of this sort by AWS is, not unlike many of the legal questions surrounding them, not settled. Something that make the use of them more complicated, and with their implementation it is not unlikely many legal issues will be sought settled.

## **3.2 Targeting Law**

The laws of targeting is the section of IHL wherein the regulations for how an attack can be conducted is regulated, including who or what is a lawful target. There are four basic principles: Military necessity, distinction, proportionality and humanity. They have a long history in IHL and are well established. The principles are applied equally to all parties of a conflict, regardless of perceptions of aggressors or defenders.<sup>44</sup> Although the rules mentioned here are binding for all states, there may be additional treaties which could further restrict the use of weapons any particular state could lawfully utilize in armed conflict.

### **3.2.1 Limitations on Warfare and military necessity**

The prevailing agreement within IHL is the idea that modern law on armed conflict presents clear limitations for the methods of warfare employed by states.<sup>45</sup> It has been summarised as military necessity being only “those measures which are ... lawful according to the modern law and usages of war” in the Lieber code of 1861.<sup>46</sup> This same sentiment was further developed in the Brussels Declaration of 1874 and the rule was far more clearly stated in the Hague Regulations of 1899: “The right of belligerents to adopt means of injuring the enemy is not unlimited.”<sup>47</sup>

The customary rules derived from these codes as well as other treaties have over time been cemented as fundamental principles for IHL. Furthermore, these principles are binding for all parties to armed conflict, not just state participants, but also other parties to the conflict. The principles also apply irregardless of the type of conflict in question.<sup>48</sup> Among the treaties of importance is the API. It should be mentioned that as not all nations are party to the API, and important exceptions are the US as well as Russia. This does however not mean that the treaty

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<sup>44</sup> W H Boothby 2012, Part 1, 1.2.

<sup>45</sup> Department of the Army Field Manual, The Law of Land Warfare, 1956, paragraph 33; API 1997, Article 35 (1).

<sup>46</sup> General Orders No. 100: The Lieber Code, Instructions for the Government of Armies of the United States in the Field, 1861, Article 15.

<sup>47</sup> Project of an International Declaration concerning the Laws and Customs of War, Brussels, 27 August 1874; Convention (II) with Respect to the Laws and Customs of War on Land and its Annex: Regulations concerning the Laws And Customs of War. The Hauge, 29 July 1899.

<sup>48</sup> G D Solis 2022, Page 10.



is without importance. Viewpoints contrary to what is stated within the API levied by such a power should be, at the very least, be grounds for considering the mentioned part as not part of customary law.<sup>49</sup>

The question of military necessity is strongly linked to the limitations placed upon the lawful means of warfare. Traditionally the concept of military necessity has limited states to:

“... only that degree and kind of force, not otherwise prohibited by the law of armed conflict, that is required in order to achieve the legitimate purpose of the conflict. Namely the complete or partial submission of the enemy at the earliest possible moment with the minimum expenditure of life and resources”.<sup>50</sup>

The limitations this introduces in what can and cannot be allowed when considering military necessity is of great importance.

### **3.3 Distinction**

The need for rules of distinction could be said to have emerged with the development of military technologies, and the way in which battlefields have merged to become more all-encompassing in modern warfare. No longer restricted to designated areas, but rather larger areas with, at times, poorly defined limits.<sup>51</sup>

The best regulation of this, and codification of rules of distinction can today be found in the API. Although the API is not ratified by all states, parts of it is recognized as customary law and as such apply to all participants.<sup>52</sup>

Article 48 of the API can be found under the section for “Basic Rules”, signifying a certain degree of importance.<sup>53</sup> Article 48 reads:

“In order to ensure respect for and protection of the civilian population and civilian objects, the Parties to the conflict shall at all times distinguish between the civilian

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<sup>49</sup> W H Boothby 2012, Part 2, 5.1.

<sup>50</sup> W H Boothby 2012, Part 2, 5.2.2.

<sup>51</sup> W H Boothby 2012, Part 6, 6.3.

<sup>52</sup> W H Boothby 2016, Part 4.1.

<sup>53</sup> F Kalshoven, Reaffirmation and development of international humanitarian law applicable in armed conflicts: The Diplomatic Conference, Geneva, 1974–1977, Part 1: combatants and civilians, Netherlands Yearbook of International Law 1977, page 116.

population and combatants and between civilian objects and military objectives and accordingly shall direct their operations only against military objectives.”<sup>54</sup>

The principles was described as the “foundation on which the codification of the laws and customs of war rests” in the commentary to the API.<sup>55</sup> However another delegate is reported to have stated that:

“as the capability of the parties to distinguish will depend upon the means and methods available ... generally or at a particular moment ... this article does not require a party to do something which is not within its means or capability”.<sup>56</sup>

To which the author of the commentary contorted:

“it is the duty of Parties to the conflict to have the means available to respect the rules of the Protocol. In any case, it is reprehensible for a Party possessing such means not to use them, and thus consciously prevent itself from making the required distinction”.<sup>57</sup>

The ICJ has stated that the principles of distinction are “fundamental and intransgressible principles of law.”<sup>58</sup> Further stating that if states do not possess or at current time have available weaponry which enables compliance with the principle, this is not grounds for indiscriminate attacks. The law does as such require the state to refrain from indiscriminate attacks, although what that entails is likely to differ based on the weapons available as well as intelligence and other information which could inform the decision of an attack.

### **3.3.1 Distinction of civilians, armed forces and combatants**

If there is to be any reality behind the principle laid out above there are certain criteria which needs to be met. Perhaps chief among these is the need for a real and substantial clarification of who is and who is not a civilian. In order to ensure this the API gives a negative definition in which it states

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<sup>54</sup> Protocol Additional to the Geneva Convention of 12 August 1949, and relating to Protection of Victims of International Armed Conflicts (Protocol I), 8 June 1977.

<sup>55</sup> Geneva Conventions of 1949 and Additional Protocols, And their Commentaries, paragraph 1863.

<sup>56</sup> API Commentary, paragraph 1863.

<sup>57</sup> API Commentary, paragraph 1871.

<sup>58</sup> Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion, I. C.J. Reports 1996, p. 226.

“A civilian is any person who does not belong to one of the categories of persons referred to in Article 4A(1), (2), (3) and (6) of the Third Convention and in Article 43 of this Protocol. In case of doubt whether a person is a civilian, that person shall be considered to be a civilian.”<sup>59</sup>

It could be argued that this definition is broader in scope and creates less stringent criteria for being a civilian than a definition not based on who is a combatant. The best counter to this is that with such a definition you catch everyone not included in the well-defined categories of armed combatants and armed forces.<sup>60</sup> And in so far as one of the aims of war, is to avoid unnecessary civilian losses defining the term in this way is desirable.

In regards to the question of distinction article 43 and 44 of the API is of particular importance. Article 43 of the API states that

“The armed forces of a party to a conflict consist of all organized armed forces, groups and units which are under a command responsible to that party for the conduct of its subordinates, even if that party is represented by a government or an authority not recognized by an adverse party. Such armed forces shall be subject to an internal disciplinary system which, *inter alia*, shall enforce compliance with the rules of international law applicable in armed conflict.”<sup>61</sup>

An important distinction between the ruleset given by the API and previous definitions, such as the Hague Regulations is the requirement for “distinctive sign and ‘carrying arms openly’”.<sup>62</sup> Further the API commentary clarifies that the use of the term “organized” is one with a certain degree of flexibility, which lends itself to interpretation. But “the fighting should have a collective character, be conducted under proper control and according to rules”<sup>63</sup> It is therefore likely not enough that individuals cooperate in isolation, for art. 43 to be invoked it would require a more permanent structure.

Article 44 of the API regards the question of combatants and prisoners of war. But for this purpose it is mainly 44 (3) which will be of interest. Stating that:

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<sup>59</sup> API 1997, Article 50 (1).

<sup>60</sup> W H Boothby 2012, Part 6, 6.5.

<sup>61</sup> API 1997, Article 43.

<sup>62</sup> W H Boothby 2012, Part 6, 6.5.

<sup>63</sup> W H Boothby 2012, Part 6, 6.5; API Commentary, Paragraph 1672.

“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. Recognizing, however, 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.”<sup>64</sup>

The importance of this paragraph, and especially in full, is how it expands the definition of who is and is not a civilian. Especially in requiring the combatants to openly carry arms in order to be identified as such. While this view of civilians is almost guaranteed to result in better protection for the civilian population who reside in or near a war zone. This article, in particular, but also article 43 of the API, although being important interpretive tools in questions regarding distinction, are also some of the more contentious parts of the API.

It must be mentioned that there are some nations who have ratified the API who hold reservations to it, which effect how the API applies to those states in particular. These reservations mainly effect the API by casting doubt on the possibility of these rules to be considered customary law. Notable among these reservations is the UK who have reserved against art. 44 (3), and this rule of the API is, in part due to this, especially unlikely to be customary law. The US however, who have not ratified the treaty and fully reject art. 43 and 44. These articles are among the chief hindrances to the US adopting the treaty.<sup>65</sup> Mainly due to the way in which these articles expand the definition of prisoners of war and alter who is and is not a combatant. Despite this the rules given by the API for distinction are well suited as guidelines for the purposes of this thesis. The objections do not significantly impact their utility as it relates to this purpose.

Under the rules of the API art. 50 it is clear that if there is any doubt as to whether a person is a civilian or not they are to be considered as a civilian.<sup>66</sup> Traditional warfare made distinguishing between combatants and civilians easy.<sup>67</sup> A reality which is reflected in IHL

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<sup>64</sup> API Commentary, Paragraph 1672.

<sup>65</sup> W H Boothby 2012, Part 6, 6.5.

<sup>66</sup> API 1997, Article 50.

<sup>67</sup> W H Boothby 2012, Part 6, 6.1 and 6.8.

preceding the API. The blurred lines of modern conflicts can cause further difficulties in distinguishing between combatants and civilians.<sup>68</sup>

In a sense modern warfare and its challenges in terms of clear separation of combatants and civilians, can be seen as a reason to give special attention to issues relating to the prohibition of indiscriminate attacks.<sup>69</sup>

### 3.4 Proportionality

The issue of proportionality of attacks are of great importance within IHL, being the main ruleset for judging which amount of force can lawfully be utilized. Although this interpretation wouldn't be wrong, the ruleset is perhaps the most intricate and vague for this section of IHL.<sup>70</sup> As a rule it would be easiest to enact *post factum*. However, proportionality considerations need to be done prior to an attack.<sup>71</sup>

To achieve a more complete understanding of the principle it can most easily be done by dividing the explanation into two separate parts. Firstly the fact that any assessment of proportionality of attacks must be done with the “expected” or “anticipated” results. The actual outcome should not be considered.<sup>72</sup> The importance is therefore placed on the judgement made by the attacker as to the overall evaluation of military gain, expected civilian losses, military necessity and other such factors.<sup>73</sup> The attackers should conduct proportionality considerations to the best of their ability, using the information available to them at the time. In such cases where the result of an attack is vastly different than expected, in perhaps leading to unexpected civilian losses and little military gain, any post factum consideration must judge the attack based on the *ex ante* understanding of the situation.<sup>74</sup>

Second is the common misinterpretation that the proportionality consideration is a done by balancing expected collateral damages and the expected military advantage gained.<sup>75</sup> Only

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<sup>68</sup> United States to the United Nations, Statement at the 75th general Assembly, Agenda Item 83, 2020; W H Boothby 2012, Part 6, 6.8.

<sup>69</sup> W H Boothby 2012, Part 6, 6.9.

<sup>70</sup> B. Saul, D, Akande, The Oxford Guide to International Humanitarian Law, Oxford University Press, 2020, Page 153.

<sup>71</sup> Y Dinstein, The Conduct of Hosties Under the Law of International Armed Conflict, Cambridge University Press 2012, page 121 – 122.

<sup>72</sup> W H Parks, Air War and the Law of War, The Air Force Law Review, 1990, page 171 – 174.

<sup>73</sup> W H Boothby 2012, Part 6, 6.11.

<sup>74</sup> B Saul 2020, Page 153.

<sup>75</sup> B Saul 2020, Page 153.

when an attack is deemed to cause “excessive” collateral damage as compared to the military advantage, will the attack be in breach of proportionality. Further complicating this consideration is the lack of a commonly accepted definition for what “excessive” collateral damage entail.<sup>76</sup> However, there is no indication that this consideration is supposed to be viewed as a mathematical formula. Instead it often refers to the judgement of the commanders. An example of how it might be done is given by the “Harvard Air and Missile Warfare Manual”. Which states, an attack shall be deemed in breach of proportionality:

“... when there is a significant imbalance between the military advantage anticipated, on the one hand, and the expected collateral damage to civilians and civilian objects, on the other.”<sup>77</sup>

As a clarification to what this might entail the ICRC has made it clear that “excessive” should not be confused with damages being “extensive”.<sup>78</sup> As such high civilian losses could be acceptable if they correspond to equal or greater military advantage. Similarly very small or minor civilian losses could be deemed excessive if the attack was expected to result in little or no military advantage gained.<sup>79</sup>

### **3.4.1 The Humanitarian consideration**

The humanitarian consideration can to a degree be extrapolated from the aforementioned limitations within IHL, but it needs to be examined in its own right. Previously mentioned rules of IHL all have the distinct air of being guided and informed by military necessity. Dinstein has referred to military necessity as one of the two driving forces of armed conflict.<sup>80</sup> The other force being the humanitarian considerations. A principle which is essential if the limitations imposed above are to be properly understood. This consideration is likely one of the main forces behind the ICRCs recommendation.

The humanitarian consideration can be traced back to the St. Petersburg Declaration of 1868, wherein the preamble states that in seeking to resolve “the technical limits at which the

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<sup>76</sup> B. Saul 2020, Page 153.

<sup>77</sup> HPCR, Commentary to the HPCR Manual on International Law Applicable to Air and Missile Warfare, Cambridge University Press, 2013, Commentary to Rule 14.

<sup>78</sup> B Saul 2002, Page 154.

<sup>79</sup> B Saul 2020, Page 154.

<sup>80</sup> Y Dinstein 2016, Page 9.

necessities of war ought to yield to the requirements of humanity.”<sup>81</sup> It has also been said that the goal of IHL is “to reiterate again the language of the same St Petersburg Declaration” and doing so in part by following the aforementioned statement but also in “alleviating as much as possible the calamities of war”.<sup>82</sup>

The principles laid out here can be seen throughout IHL with how it seeks to ‘legislate’ armed conflict. War is however fought to be won, and in achieving that goal states are often willing to take considerable measures. A key tenant of the St Petersburg declaration is to make clear that despite this, the ability of the states to make use of methods of warfare is limited.<sup>83</sup> With this in mind it could be said that IHL amounts to a system of checks and balances, much like the desired building blocks of democracy. With the goal being to facilitate war wherein human suffering is minimized, without impeding the effectiveness of military operations.<sup>84</sup> This parallel of compromises can be seen at work throughout IHL with differing degrees of compromises for different norms. But they all take note of military requirements and the humanitarian considerations when applied. States are as such bound by the laws of war and the restrictions place upon them.

Connected to the humanitarian consideration, is the prohibition of unnecessary suffering and superfluous injury. This too can be traced back to the St. Petersburg Declaration which applies to combatants, but the principle has since been extrapolated to also encompass civilians.<sup>85</sup> For combatants this shows itself in practice by the fact that in war it will usually be “sufficient to render enemy combatants *hors de combat*.”<sup>86</sup> Meaning that any injury beyond this would be seen as unnecessary in order to achieve the goals of war.

A commonly used description of the rule can also be found in the English translation of the Hague Regulation 23 (e), which states “To employ arms, projectiles, or materials of a nature to cause superfluous injury.”<sup>87</sup> This translation is not binding to the parties, but it is commonly used. There is also a newer translation, “To employ arms, projectiles, or material calculated to cause unnecessary suffering.”<sup>88</sup> Note that although the English translation was,

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<sup>81</sup> Declaration Renouncing the Use, in Time of War, of Explosive Projectiles Under 400 Grammes Weight. Saint Petersburg, 11 Decemer 1868, Preamble.

<sup>82</sup> Y Dinstein 2016, Page 9; St. Petersburg Declaration, 1868.

<sup>83</sup> Y Dinstein 2016, Page 9.

<sup>84</sup> W H Boothby 2012, Part 1, 1.3.

<sup>85</sup> Y Dinstein 2016, 5.1.1.

<sup>86</sup> API Commentary, Paragraph 1414.

<sup>87</sup> Hague Regulations, Article 23 (e).

<sup>88</sup> T McFarland 2020, Page 15.

amended the original French text remains unchanged.<sup>89</sup> Both English translations have however been used in official documents later, making it important to note them both.<sup>90</sup> The potential impact this change could have on the issue of AWS will be examined in some detail below.

The concept of unnecessary suffering is in itself a difficult one. And what could constitute it can also be vague. For this it can be noted that the clarity of the concept is equally good or bad, regardless of which English translation is used. They both convey comparative and not absolute concepts leaving room for interpretation.<sup>91</sup> However a common way of describing what would constitute causing unnecessary suffering is “international law only forbids the use of weapons that increase suffering without really increasing military advantage.”<sup>92</sup>

The concept of unnecessary suffering has by some been linked to the aforementioned rules regarding proportionality.<sup>93</sup> This approach has seen much criticism for not taking the realities of war into account.<sup>94</sup> Further the rules of proportionality are to be used in questions regarding military advantage as opposed to civilian losses. The questions of suffering and injuries are also entirely separate issues within IHL. Further exemplifying this is the fact that the use of weapons where there is no chance of survival does not automatically result in them causing unnecessary suffering.<sup>95</sup>

In this “unnecessary suffering” or “superfluous injury” should not be understood as a concept linked to the lethality, or non-lethality of a weapon.<sup>96</sup> Although it is more complicated than this, the distinction of lethal and non-lethal are not clear. Combatants may survive lethal weapons, and it is not unheard of for non-lethal weapons, like rubber bullets to kill. Further weapons such as blinding lasers, are not lethal, but clearly cause unnecessary suffering.<sup>97</sup> Dinstein gives two main parameters to determine unnecessary suffering.

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<sup>89</sup> Y Dinstein 2016, Page 74.

<sup>90</sup> W H Boothby 2012, 5.1.1.

<sup>91</sup> W H Boothby 2012, 5.2.2.

<sup>92</sup> B M Carnahan, Unnecessary Suffering, the Red Cross and Tactical Laser Weapons, *Loyola of Los Angeles International and Comparative Law review*, 1996, page 713.

<sup>93</sup> M Bothe, *New Rules for Victims of Armed Conflict on the Two 1977 Protocols Additional to the Geneva Convention of 1949*, Brill, 2013, Page 224.

<sup>94</sup> Y Dinstein 2016, Page 75.

<sup>95</sup> Y Dinstein 2016, Page 75.

<sup>96</sup> G Nystuen, *Non-lethal weapons and international humanitarian law*, FFI, 2008, Page 23.

<sup>97</sup> Y Dinstein 2016, Page 75.



1. Is there an alternative weapon available, causing less injury or less suffering?
2. Are the effects produced by the alternative weapon sufficiently effective in neutralizing the enemy personnel?<sup>98</sup>

As such it is clear that the question of unnecessary suffering is not one with a clear answer. Therefore it necessitates a case-by-case judgement. This would also likely be the case for AWS and their employment.

### **3.4.2 Indiscriminate Attacks**

Due to the development of weapon technology in the last century, a key part of the modern understanding distinction and proportionality is the prohibition of indiscriminate attacks.<sup>99</sup> There is even evidence of early indications of such a rule dating as far back as before the second world war.<sup>100</sup> The API gives certain examples of what could constitute indiscriminate attacks, although this should not be viewed as a comprehensive list.<sup>101</sup>

“(a) 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 a similar concentration of civilians or civilian objects; and

(b) an attack which may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, which would be excessive in relation to the concrete and direct military advantage anticipated.”<sup>102</sup>

Following the wording of this article of the API it begins by establishing the prohibition of indiscriminate attacks, before outlining that any attack which is not directed at a military target would have to be seen as such. However, more importantly as it relates to AWS and the concerns of the ICRC, the last clarification the API gives in relation to earlier codifications is

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<sup>98</sup> Y Dinstein 2016, Page 75 – 76.

<sup>99</sup> API 1997, Article 51 (4).

<sup>100</sup> H M Hanke, The 1923 Hague Rules of Aerial Warfare: A contribution to the development of international law protecting civilians from air attack, Article 24 (3).

<sup>101</sup> W H Boothby, Weapons and the Law of Armed Conflict, Oxford University Press, 2016, 6.4.1.

<sup>102</sup> API 1997, Article 51 (4).

to outline that weapons or methods whose effect cannot be limited or clearly directed will always be indiscriminate.<sup>103</sup>

Included in this prohibition is the use of weapons who are by their nature indiscriminate, and in their deployment lack the capability of distinguishing between lawful targets, and those protected under IHL.<sup>104</sup> There are two ways in which a weapon can be deemed to be indiscriminate by nature, the first being that it cannot reliably be aimed or targeted at military objectives. The classic example of this is the German V2 rocket, which could be targeted at areas of the UK, but lacked targeting sophisticated enough to strike a distinct target.<sup>105</sup>

The second prohibition is towards weapons which can be targeted in a sufficiently precise manner, but lack sufficient control of their effects. This rule is the basis for the prohibition of biological weapons. Although they could plausibly be precisely targeted at combatants, there is no way to control or hinder the spread to the civilian population.<sup>106</sup> Therefore such a weapon, despite potentially being very precise in the initial employment would be prohibited under IHL.

### **3.5 Martens Clause and AWS**

The Martens Clause originates from the preamble on the Hauge Convention 1899. But has since developed to have more influence within IHL than its origin might suggest. It has been reported that it was included as a way of addressing concerns among parties to the negotiation in anticipation of more complete codifications. The clause is now generally accepted to have application throughout IHL.<sup>107</sup>

The clause has since been part of later conventions in which the wording in large part was at least substantially the same. Among these are the Hauge Convention 1907, the four Geneva Conventions of 1949, The API of 1977 and the CCW.<sup>108</sup> The clause has been used as part of

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<sup>103</sup> W H Boothby, *The Law of Targeting*, Part 6, 6.9.

<sup>104</sup> B Saul 2020, Page 155.

<sup>105</sup> B Saul 2020, Page 155.

<sup>106</sup> B. Saul, D 2020, Page 156.

<sup>107</sup> T Meron, *The Martens Clause, Principles of Humanity, and Dictates of Public Conscience*, *American Journal of International Law* 2000, page 78.

<sup>108</sup> V V Pustogarov, *The Martens Clause in International Law*, *Journal of the History of International Law*, 1999, page 128–9; 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 Wounded, Sick and Shipwrecked Members of 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

international courts *jurisprudence*, military manuals and the consensus is the clause has the status of customary law.<sup>109</sup> The formulation which will be used here and which seems to hold the most relevance is that of the API, Article 1(2):

“In cases not covered by this Protocol or by other international agreements, civilians and combatants remain under the protection and authority of the principles of international law derived from established custom, from the principles of humanity and from the dictates of public conscience.”<sup>110</sup>

The clause is generally well suited for use with new technologies given its loose wording and the more general protections it affords both combatants and civilians.

Although the Martens Clause has reached customary law status, this does not equate a universal understanding of how it should be applied. Something which is particularly evident when it relates to issues regarding AWS. One of the reasons for this is the fact that the content and understanding of the clause cannot be viewed as static. This is clear not only in so far as how it has been used, but can also be shown by the number of different treaties in which it has been included. As the clause has been used and adopted into different treaties, the way it should be viewed has changed. One of the main examples of this is the understanding that the “principles of humanity” needs to be in accordance with the perception at the time.<sup>111</sup> It is seen as a fact of law, that law will always trail behind advances in technologies. With this it is often necessary, if law, is to be used effectively that it allow for the fluidity of what was, or is acceptable, rather than a fixed understanding. If the Martens Clause can be seen as imposing obligations, it is therefore necessary for the changing views to be allowed when interpreting it.<sup>112</sup>

Despite this seeming consensus, the clause does impose certain challenges. The wording leaves much for interpretation, and the concepts are equally open to interpretation. Meaning that exactly how it is to be invoked or utilized is uncertain. There seems to be little consistency in the utilization of it, be it in courts or academic works. It would be outside the

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Civilian Persons in Time of War, 12 August 1949; UN, The Convention on Certain Conventional Weapons, 21 December 2001.

<sup>109</sup> T McFarland 2020, page 101 – 102.

<sup>110</sup> API 1997.

<sup>111</sup> T Meron, 2000a, page 78.

<sup>112</sup> R Ticehurst, The Martens Clause and the Laws of Armed Conflict, International Review of the Red Cross, 1997, Conclusion.

scope of this thesis to compare or reconcile all different interpretations of the Martens clause. As such only a few differentiating opinions will be chosen, and these will be used in order to determine what, if any, effect the Martens Clause has on the use of AWS.

### 3.5.1 Interpretations of the Martens Clause

One interpretation of the Martens clause is narrow. In this view,

“customary international law continues to apply after adoption of a treaty, so that absence of a relevant treaty norm forbidding, for example, a means or method of warfare is not sufficient to establish that the means or method is permissible; it must still be assessed in relation to existing rules of customary international law.”<sup>113</sup>

The result is that the Martens clause cannot be a basis for weapons prohibitions in and of itself. For such a prohibition to be implemented a customary or conventional prohibition would have to be in effect.

The second is a broad view of the Martens Clause. It pertains to a plain interpretation of Article 1(2) of the API, the result being that “principles of humanity” and “dictates of public conscience” would have to be regarded as independent sources for IHL.<sup>114</sup> Thus, public conscience and principles of humanity would need to be used in tandem with each other.<sup>115</sup>

There is no fixed methodology for how “the principles of humanity” can be determined. It needs to be considered in concordance with the standards at the time.<sup>116</sup> The evolution of human rights since the origin of the Martens Clause have had an impact on how this principle needs to be interpreted. Therefore what falls within this definition is likely to have a broader scope today.

It has been argued that in war IHL is *lex specialis*, and therefore must take precedence over human right standards.<sup>117</sup> What the Martens Clause does not make clear, is whether concepts originating in other areas of law can be used as interpretative tools.<sup>118</sup> However, its wording

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<sup>113</sup> T McFarland, 2020, Page 103 – 104.

<sup>114</sup> T McFarland, 2020, Page 102.

<sup>115</sup> R Ticehurst 1997, Conclusion.

<sup>116</sup> T McFarland, 2020, page 104 – 105.

<sup>117</sup> S Casey-Maslen, *Weapons under International Human Rights Law*, Cambridge University Press, 2014, page 601; T McFarland, 2021, page 107.

<sup>118</sup> T McFarland, 2020, page 107.

does not preclude the use of other areas of law for interpretation. This lack of clarity is challenging when using the clause for interpretation and clarification of legal standards within IHL, and opens the Martens Clause to a wide array of uses. However, it seems likely that sources outside of IHL should not be used to aid interpretation when the Martens Clause is utilized.

This lack of common interpretation and international agreement on how the Martens Clause is to be understood, could be an obstacle when it comes to the use of the clause. It still maintains an important position due to its status as customary law.<sup>119</sup> The wording “the principles of humanity” and “the dictates of the public conscience” it also aids in making it a necessary interpretive tool for other principles of IHL.

However in so far as it relates to the use of AWS, neither the broad or narrow interpretation makes it possible to extrapolate a limitation on the use or development of AWS from the Martens Clause alone. Either the Martens Clause is an interpretive tool in and of itself or it is to be used in concordance with other principles of IHL. In both cases the use of AWS would need to be evaluated against these principles.

### **3.5.2 The ICRC and the Martens Clause**

Even though the Martens Clause cannot be used on its own to achieve the ICRC recommendations, it is still an important interpretive tool, regardless of the approach to the question of its implementation. It would not matter if the clause was a source of law on its own or if it was just a tool for interpretation when it comes to the question of banning certain types of weapons, like AWS. In either case it seems clear that the Martens Clause would remain an important interpretive tool.

The wording of the Martens Clause contain important interpretive elements that have a certain degree of overlap with the aims expressed by the ICRC. Although not expressly mentioned in the statement, it is clear that “the principles of humanity” as well as “the dictates of the public conscience” both weigh heavily on the professed goal of achieving a legally binding agreement limiting or banning the use of AWS. Concerns have been raised regarding the humanity of AWS.<sup>120</sup> Or more precisely, the fear that use of AWS in will lead to issues when

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<sup>119</sup> R Ticehurst 1997, Paragraph 9.

<sup>120</sup> Stop Killer Robots 2022b.

it comes to this aspect of IHL. Questions regarding the public conscience are perhaps harder to quantify, but the substantial world wide support of organisations such as “stop killer robots” do indicate that AWS and their use should be seen, at least as an issue that needs to be judged against the Martens clause.<sup>121</sup>

The reason for this is the support garnered by the campaign, and this warrants the discussion of whether or not the threshold for “dictates of public conscience” is met. The fact that this support has not materialised in state action could indicate that the threshold is higher than what this campaigned, and others have managed to reach. There is also the question of whether the fears are well founded and well informed, and whether or not public outcries of any scale could reach the threshold if it was based on a lack of understanding.<sup>122</sup> This question will to some extent be mentioned bellow, but cannot be extensively covered within the scope of this thesis.

The clear connection between the recommendations of the ICRC and the substantive points raised in the Martens Clause means that although it seems unlikely that the clause can be used in itself to achieve targeted legal norms for the use of AWS, the clause will at the very least have a role in interpreting the legality of any use of AWS today.

## **4 What are AWS?**

Having established the current state of IHL as it relates to AWS, the question that follows what an AWS is, and how IHL and the ICRC recommendations relate to them. As there is no clear consensus as to what constitutes an AWS, it is necessary to establish a baseline understanding. This lack of consensus should not be confused with the idea that it is without use to consider what some of the differences between definitions used by states and non-state actors are. These definitions can vary greatly, both in scope and meaning but by using them it could be conceivable to find a working definition of the terms that can guide the rest of this thesis. In order to do so a paper published by Taddeo in 2021 will be used as the basis for comparison.<sup>123</sup>

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<sup>121</sup> Stop Killer Robots 2022b.

<sup>122</sup> S R Johansen, So Man Created Robot in His Own Image: The Anthropomorphism of Autonomous Weapon Systems and the Law of Armed Conflict, Oslo Law Review 2018.

<sup>123</sup> M Taddeo 2021, Page 7.

It is not within the scope of this thesis to examine every countries definition to its full extent and as such they will only be used to give a cursory look to extrapolate a general idea of what should and could be included in the term. The nations will be listed in alphabetical order and for the purpose of this thesis military power or international influence will not be fully accounted for in determining the weighting of the different definitions.

## 4.1 China

The Chinese government has expressed a wish to limit the development of AWS.<sup>124</sup>

Their expressed desire is to limited to LAWS, and not all AWS. In so far the definition it refers to what they deem to be LAWS five basic characteristics. The weapons lethality, its autonomy, impossibility for termination, indiscriminate effect and evolution.

Weapon lethality means that only a weapon sufficiently dangerous can fall within the scope, it is understood to mean a weapon with lethal capabilities. The requirement of autonomy refers to the weapon making decisions without human intervention. This requirement is similar to parts of the US definition which will be examined below.<sup>125</sup>

Next comes a requirement for an impossibility of termination, meaning that once the device has been put into use there is no way to terminate it, or its use. Indiscriminate effect does not refer to the result of a potential attack, but rather that the weapon would function and execute its task regardless of conditions, targets or scenarios. The last criteria is evolution. Meaning that the weapon would need to be able to learn while active in a way that exceed human expectation.

## 4.2 Germany

The German government released its definition of what an LAWS is in 2020.<sup>126</sup> Their definition references LAWS specifically, the same as the Chinese government. However it differs in that they simplify the criteria to only encompass "... systems that completely exclude the human factor from decisions about their employment."<sup>127</sup> This is clarified with them further stating that emerging technologies with origins in the field of LAWS need to be

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<sup>124</sup> M Taddeo 2021, Page 8.

<sup>125</sup> US Congress, Defense Primer: U.S. Policy on Lethal Autonomous Weapon Systems, 2020.

<sup>126</sup> M Taddeo 2021, page 8.

<sup>127</sup> M Taddeo 2021, page 8.

distinguished from the LAWS themselves. They also state that AI and autonomy can be used in weapons in accordance with international law, despite these technologies being integral to LAWS.

Here we see a different but similar approach to the Chinese one, with the focus on weapons that carry lethal capabilities and excluding weapons that lack this. There is however a big distinction in that they explicitly mention the legality of use for such weapons.

### **4.3 ICRC**

The ICRC released their definition of what an AWS in 2016. An AWS is “Any weapon system with autonomy in its critical functions.”<sup>128</sup> In this they encompass a weapons ability to select and attack, or use force against targets “without human intervention.”<sup>129</sup> Exactly what is deemed to be human intervention is unclear, and it highlights one of the main issues with definitions such as this. Even within IHL it is undisputed that any weapon needs “adequate human control” to be used lawfully.<sup>130</sup> But for AWS and LAWS as well as those weapons who fall outside the scope of these weapons categories there is no common understanding as to precisely what this entails.

This definition is however also a good example to show how many of the definitions of AWS and LAWS seem to intersect and often seek to define the same thing. In all examples so far we can see that the ability for the weapon to make use of force has been a part of the definition. Even if the level of force needed is not held to be equal in them all. The ICRC for one does not explicitly state that any use of force needs to be possible for the system for it to fall within their definition.

### **4.4 United Kingdom**

The United Kingdom has adopted the NATO definition of “a system that, in response to inputs, follows a predictable outcome.”<sup>131</sup> As well as their own definition of a system

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<sup>128</sup> M Taddeo 2021, Page 8.

<sup>129</sup> ICRC 2021, Preamble.

<sup>130</sup> T Chengeta, What Level of Human Control Over Autonomous Weapon Systems is Required by International Law?, EJIL:Talk, 2018

<sup>131</sup> The NATO definition is for “autonomous systems” but does make use of characteristics that identify AWS; M Taddeo 2021, Page 9; T B Sheridan, Human and Computer Control of Undersea Teleoperators, Massachusetts Institute of Technology, 1978, page 8–17.



“capable of understanding higher-level intent and direction” and currently use both.<sup>132</sup>

Although these differences could prove hard to reconcile within UK politics, it is not an issue for this thesis. It is however noteworthy in showing that nations can have multiple definitions for the same issue.

The UK definition is one of the least restrictive AWS definitions. A definition which in theory allows for anything up to “true AI” in order to qualify as an AWS. Something that places very few if any limits on the capabilities of the weapons before it reaches the threshold set by the House of Lords. It needs to be noted that they have also stated that adequate human control is necessary, but as with others states there has not been any further explanation as to what this entails.

## **4.5 The United States of America**

The US uses a definition of an LAWS being a weapon which “once activated, can select and engage targets without further intervention by a human operator.”<sup>133</sup> As such the US definition allows for a weapon, once activated, can operate seemingly fully autonomously. The Department of Defense clarifies that for them to consider a LAWS to be legally permissible under IHL “broader human involvement” is necessary.<sup>134</sup> What differentiates the US from others is that they attempt what “human involvement” entails. They state that the level of control needs to be “appropriate” for the situation, and argue that such a flexible term is well suited as there is no fixed amount of human involvement that fits every situation.

The US also has a classification system in use to differentiate between types of LAWS, “human out of the loop” a weapons system that has full autonomy where no human involvement is needed after initial activation. “Human on the loop” a system which behaves with autonomy, but where a human has the capability of monitoring the system and its function, as well as halt it if they see fit. And “Human in the Loop”, these are systems where a human is involved in every facet of the weapons operation and targets are selected by humans. These kinds of weapons has also been referred to as “fire and forget” weapons and include some guided missiles which when fired use autonomous functions to hit the target.<sup>135</sup>

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<sup>132</sup> House of Lords, Select Committee on Artificial Intelligence, 2018.

<sup>133</sup> US Congress 2020, Page 1.

<sup>134</sup> US Congress 2020, Page 1.

<sup>135</sup> US Congress 2020, Page 1.

## 4.6 Forming a working definition

From the different definitions shown above it is clear that although there are many different definitions in use today, there is a certain amount of overlap in most of them. While most do not have a list of categories for identifying what an AWS or LAWS is like the Chinese definition, many of those categories can be seen reflected to a certain extent in the other definitions. As an example of this we can see how use of force or more specifically lethal force from the first of China's five criteria can be seen repeat in most of the other definitions. As the Chinese definition is by far the most detailed in its approach, it will be used as the basis to create a working definition for the purposes of this thesis.

The second criteria in which we see an overlap is the requirement for autonomy. It could seem unnecessary to specify this when talking about AWS but as with most things in law such a clarification is needed. The level of autonomy needed is one of the areas in which the dispute seems the most focused. With some drawing the line at true AI such as the UK, and NATO include all systems with a degree of autonomy. The NATO definition is not strictly meant for AWS but even so it would incorporate such systems. It does however seem as if most would agree that in order to be seen as an AWS, the system would need a degree of autonomy wherein it can make decisions without intervention of humans. Whether or not human activation is sufficient to be considered "human intervention" is a discussion in and of itself, but for this paper it will be assumed that is not the case. For a more in depth analysis of the issue please see the footnote.<sup>136</sup>

The last of the criteria to be specifically mentioned here is the one of "evolution". This seems to be used solely in the Chinese definition. Although, a similar requirement can be inferred for the definition presented by the UK. As such it would seem likely that using the ability to evolve, or as understood to learn would not be necessary. It could be mentioned that what this evolution entails isn't clear and that it could be taken to mean a system capable of adapting to changing circumstances. More likely however, would be that this is meant to refer to something akin to deep learning or similar technology. A system could when using that "evolve" while in use, and adapt, as an example, targeting criteria while activated. It is however unlikely that this would be allowed, and far more likely that such changes would

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<sup>136</sup> T McFarland 2020.

only be implemented in retrospect. In part due to the lack of control, but also how allowing such changes could affect the predictability of the weapon.

Based on this an extrapolated defined of an AWS could be: a system capable of utilizing or directing lethal force, without human intervention, possessing the ability to register situations during its activation giving the possibility to “evolve” the system if desirable.

## **5 What is weapons autonomy?**

Having established what the current state of IHL is and how it relates to AWS as well as shown what an AWS is, this part will look into the more technical aspect of AWS. This is among the issues making the discussion on weapon autonomy difficult, especially in combination with the lack of general consensus for what an AWS is. Going forward both the working definition and the ICRC recommendation will, in part, be used to analyse the questions of autonomy and other issues surrounding AWS.

### **5.1 The relationship between autonomy and technology**

The notion of machine autonomy is linked to the development of modern technologies. Without the advancements in processing power and computer technology seen in the past decades, AWS may not have gained prevalence. As seen above the question as to what autonomy is can almost exclusively be linked to machines and how we view them.<sup>137</sup> The working definition tells us that it is necessary for the AWS to have the capabilities of performing tasks and operations without human intervention.<sup>138</sup> The extent of which is not clear, but even so, the ability to self-regulate actions is an inherent part of any AWS.

This ability to operate in real world environments, doing so without the intervention or control of a human, beyond the point of activation, is the essence of weapons autonomy. Higher levels of autonomy will usually correlate to the system having the ability to operate without supervision for longer periods of time.<sup>139</sup> Further there is nothing inherently stopping a machine being made, with limitations on the degree of autonomy it can exude. Examples of

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<sup>137</sup> S Johansen 2018.

<sup>138</sup> T McFarland 2020, page 34 – 35; See Part 4.6, Forming a working definition.

<sup>139</sup> T McFarland 2020, page 29.

this could be both the American “human on” and “in the loop systems”.<sup>140</sup> Systems can also be designed to be flexible in switching between different operational modes.<sup>141</sup>

## 5.2 Deep Learning and the Black Box

Another prevalent issue in the discussion of not only AWS but automation is what is commonly known as “the black box problem” a problem often linked to system predictability. This is an issue stemming from the ways computer learning work, and our lack of understanding of the subject. This issue is in some form addressed by the AI act proposed by the EU, which is expected to be passed in the near future. Even so this does not provide a solution as the act expressly excludes AI meant for police or military purposes.<sup>142</sup>

The following explanation will not be extensive, and although it seeks to give the necessary understanding for the purpose of this thesis it is by no means a comprehensive explanation of the subject. Before the black box can be handled the question of deep learning must be understood. This is just one of many names used to describe the process of machines being programmed to self-adjust parameters, in order to get better at predicting the desired outcome. An example can be a machine tasked with recognising cat pictures, it is then given a set of parameters before being shown pictures. Whenever the machine makes a mistake it adjusts the mathematical weight of the given parameters, getting better and better at the desired task. These parameters are all interlinked as individual nodes, and are compared and weighted against all the other nodes. Often in far more complex ways than described here. Eventually you would expect such a machine to become almost perfect in identifying cat pictures, although it could take million or billions of pictures.<sup>143</sup>

The issues arise in the fact that the layers used to “learn” are hidden, and it is not as of this moment, possible to know how or why the machine reached its conclusion.<sup>144</sup> We know that the use of the nodes means it learns by recognising patters, but the inability to see how the

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<sup>140</sup> See Part 4.5, The United States of America.

<sup>141</sup> Defence Science Board, Patriot System Performance, Report Summary, Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics, 2005.

<sup>142</sup> European Commission, Proposal for Artificial Intelligence Act, 2021/0106(COD), Paragraph 12.

<sup>143</sup> Anonymous 1, ELI5: What is deep learning?, Think Automation, 2022 ; 3Blue1Brown, But what is a neural network? Chapter 1, Deep learning, Youtube, ; Gradient descent, how neural networks learn, Chapter 2, Deep learning, Youtube, 2017.

<sup>144</sup> Anonymous 1, The AI black box problem, Think Automation, 2022.

machine does this is by many seen as a major concern. There is currently work being done to resolve this issue, but no adequate solution has as of yet been found.<sup>145</sup>

This issue of deep learning as a "black box" where we can't know exactly how or why the machine reached its conclusion has given rise to concerns about the predictability of AWS, a point raised in the ICRC recommendations. Although it is possible to argue that AWS developed and tested are predictable by our understanding of their function, this lack of transparency and knowledge of how exactly they function, makes it is clear why some are sceptical.<sup>146</sup> When seen in the light of the fact that whatever training is given to the AWS this will not be in true combat. With the unpredictability in such a setting it seems plausible that any AWS will inevitably end up in a situation unknown to it. In such a scenario it is clear that the potential for unpredictability is present. This potential unpredictability is however hard to quantify and it is far from a certainty that this will be enough to warrant a ban. Although there is agreement to some degree of unpredictability, the actual amount of which is disputed. It seems clearly unreasonable to expect perfect predictability of any system before authorising its use.<sup>147</sup>

### **5.3 Human Involvement: How much Autonomy?**

Many of the ICRC recommendations concerns human involvement. The specifics are unclear, therefore it is necessary to consider what degree of autonomy and how much human involvement would or should be required.

The ICRCs recommendation to “ensure effective human supervision, and timely intervention and deactivation.”<sup>148</sup> There is no clarification as to what level of human oversight or interaction would be considered “effective”. It could be assumed that the ICRC is recommending a high degree of human involvement in any decision involving AWS. This is however not necessarily the case, but compared to how nation states have worded their views on human involvement, it seems likely.<sup>149</sup> The ICRC makes use of a stronger wording, which

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<sup>145</sup> C Zednik, Solving the Black Box Problem: A Normative Framework for Explaining Artificial Intelligence, Philosophy and Technology, 2019.

<sup>146</sup> B Docherty, The Need for and Elements of a New Treaty on Fully Autonomous Weapons, HRW 2020.

<sup>147</sup> Rand Corporation, Military Applications of Artificial intelligence, Rand Corporation, 2020, Page 13.

<sup>148</sup> ICRC 2021.

<sup>149</sup> See Part 4, What are AWS?.

indicate the intent to push for stricter criteria to be included in potential treaties regarding AWS.

For current IHL there are no clear requirements for any degree of human involvement. Still, there seems to be consensus among nation states, important military organisations as well as NGOs, that some degree of human interaction is a requirement under IHL.<sup>150</sup> It could therefore be argued that the need for some human involvement is a customary norm as enacted by the consensus of the nation states. Given the nature of IHL this is important for interpretation of the rule, as the expressed opinions and actions of states is what shapes customary law. The challenges arise when the question of what this means has to be reviewed. Although there seems to be a clear consensus for the need to facilitate meaningful human control, there is no general agreement for any specific requirements.

The UK is perhaps the best example of a fringe interpretation. With their understanding of an AWS needing to be developed to a degree comparative to true AI before it falls outside of their understanding of what is permissible under current IHL. If this interpretation is used for AWS development it is possible to envision close to no human involvement or control after the activation of the system. There is reason to believe that this is somewhat unlikely, but it is arguably not far-fetched.<sup>151</sup>

Mistakes might happen despite clear inclusion of human operators, as one of the incidents with the Patriot missile system shows.<sup>152</sup> In an incident which occurred after other fatal mistakes the Patriot system was placed under manual oversight, meaning that the operator would have to authorise any missiles fired. After a warning of an incoming missile the operator triggered the “auto-fire”, resulting in a US Navy F/a-18C Hornet fighter being shot down and the death of the pilot. The incident was caused by the system mistakenly identifying the friendly aircraft as a missile, and the operator, reportedly, activating the auto-fire function for an unknown reason.<sup>153</sup> Although this was an incident that took place almost two decades ago, and it is safe to assume advancements in technology has happened since then. It does show that human involvement in the decision making does not necessarily result

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<sup>150</sup> See Part 4, What are AWS?.

<sup>151</sup> Rand Corporation, 2020, Page 52-53.

<sup>152</sup> Patriot System 2005, Page 2.

<sup>153</sup> T McFarland 2020, Page 65.

in an inherently safer system. Despite the AWS failure in the aforementioned mentioned example, the Patriot System, could meet the requirements of the ICRC recommendation.

A pitfall is the delay human involvement can cause. There are situations where time is critical, and the time it would take for a human to make a decision would mean that it was already too late. In such cases, direct human involvement risks putting the lives of the operators or combatants the systems seek to protect at increased risk.

Striking a balance between sufficient controls to correct wrong machine interpretations, and a high degree of human supervision may therefore be seen as what lies in the word “effective” within the recommendation.

While identically trained humans may react differently to the same situation, identical machines with identical coding can be trusted to act much more consistently, be it correct or not.<sup>154</sup> There are inherent flaws to both, and either can be preferable in given situations. The report on the Patriot system found that one of the key issues in its employment was that

“... the Patriot system ... seemed to be a poor match for the conditions of OIF.<sup>155</sup> The operating protocol was largely automatic, and the operators were trained to trust the system’s software”.<sup>156</sup>

With this it is possible to assume that given better training, at least some incidents could have been avoided. If this training of the operators is combined with the advancements of AWS that has likely taken place in the decades since, it is not unreasonable to expect that the operational reliability of AWS has improved.

One of the main questions to arise in this discussion is where the line is to be drawn. In essence an AWS is a weapon not unlike any other. Some have argued that the process of automating the horrors of war by delegating the act of killing to machines go as far back as the invention of firearms.<sup>157</sup> And perhaps more to the point the issue of landmines must be addressed due to their potential effect on the issues of AWS .

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<sup>154</sup> T McFarland 2020, Page 66.

<sup>155</sup> OIF: Operation Iraqi Freedom.

<sup>156</sup> Patriot System 2005, Page 2.

<sup>157</sup> C Hellestveit, Krigens Folkerett Norge og vår tids kriger, Universitetsforlaget, 2020, Page 634.

Although landmines are not autonomous in the sense that they do not have the capability of determining their actions, they do have an undeniable link, at least in some sense to the discussion of AWS. The argument has been made that landmines should be counted as AWS under a strict reading of the technical description.<sup>158</sup> Although the technology used in landmines is not what immediately comes to mind when AWS are mentioned, it is a weapon system that is autonomous. Nevertheless, landmines do “select” targets to engage without the intervention of humans. The weapon does have limited to no ability to distinguish between combatants and civilians, and once placed are generally difficult to deactivate. These challenges lead to the creation of the Ottawa convention seeking to ban the use of such weapons.<sup>159</sup> Even so it is undeniable that landmines are AWS in a strict reading of the rules.

This puts the question of both human involvement and the wider implications of targeting in a slightly different perspective. And although the Ottawa convention did seek to prohibit landmines not all nations have ratified it, and there are some key exceptions among those who did not, namely the United States, China and Russia. With these nations not being party to the convention, and still actively making use of land mines in war today, the rules it stipulate cannot be said to be customary law, and is therefore only binding to nations party to it.<sup>160</sup>

The implications that a landmines, which falls within the strict criteria for AWS, indicate that under current IHL any meaningful control of a weapons system is only necessary prior to activation, and a judgement of the risk of targeting and distinction at that time. With this it is clear that a weapon needs a very limited amount of “autonomy”, before it could be considered an AWS, or for human involvement to be deemed sufficient. However it needs to be noted that this is not an argument which is widely advocated for, and most do not view landmines as AWS. Even so the implication of their legality under current IHL, as well as the potential implications of their “autonomy” and inherent unpredictability in targeting, warrant them being mentioned. Although, due to the lack of recognition of the argument it will not be addressed further beyond what has been done here.

In context this could indicate that under current customary rules for weapons and autonomy any AWS which has human interaction in its activation should be considered lawful. The

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<sup>158</sup> T McFarland 2020, Page 81.

<sup>159</sup> The 1997 Convention on the Prohibition of the Use, Stockpiling, Production and transfer of Anti-Personnel Mines and on their Destruction.

<sup>160</sup> J Ismay, New Russian Land Mine Poses Special Risk in Ukraine, The New York Post, 2022.



statements of states and NGOs do seem to primarily support a view that slightly stricter criteria should be applied to weapons more advanced than land mines. Although as shown by the UK this is not the case for everyone. Therefore, it seems likely that the criteria for human involvement is somewhere between human activation and active oversight at this time.

## **5.4 The Targeting Process – Machine v Human**

The process that happens when targeting with weapons operated by humans seem relatively simple. First the combatant is given ROE, education in the laws of war, a understanding of the purpose for their deployment and goals of the mission. Then once combat is engaged the combatant will identify those believed to be enemy combatants, and typically fire their rifle. It could be argued that only the last part of this should be considered as part of the targeting process, and in a legal sense that would be correct.

The necessity to mention it here comes from the importance the process prior to the actual targeting has. Humans are individuals and do not react the same, even to the same situation. But with training and education it is possible for humans to have generally similar reactions. Meaning that in an ideal world the combatants would only targets such objectives as those allowed for by their ROE and IHL. Further if mistakes happen humans can be questioned, and asked to explain why they made a mistake or acted in the manner that lead to the unwanted outcome. For machines it is not so simple.

Even advanced machines, such as those typically targeted by opponents of AWS, can in essence be boiled down to a series of “yes” and “no” questions.<sup>161</sup> In the case of machines utilising deep learning it will likely be millions of such calculations, but even so that does not change how a conclusion is reached. The answers to these questions will as with humans be informed by the training given to the machine, the more training the more accurate the results. As shown by the cat picture example, we can see how a machine becomes better at tasks. What sets the machines apart is again the fact that they all reach the same conclusion, assuming they are the same system. Further dividing them is the fact that machines, do not possess any ability to assess circumstances they are not trained for. This only becomes an issue when situations they are not trained for occur.

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<sup>161</sup> M Vincent, Deep Learning has (almost) all the answers: Yes/No Questions Answering with Transformers, Medium, 2020.

When issues of unpredictability appear it is clear that a reason should be found. But with the black box issue as stated above, it is likely that it will not, at least not currently, be possible to know exactly why the mistake was made. It can be inferred that the system mistakenly identified a target, but the reason for this, beyond lack of training cannot be known. The issue compounds with the fact that machines, unlike humans, are incapable of learning when they reach the correct conclusion. And as a result, you can only train algorithms or as often referred to “AI”, when they makes mistakes.

This issue is often at the hearth of the opposition to AWS, and even in cases where it isn't expressly mentioned the fear can often be traced back to this, and the inability of knowing why something went wrong. Despite this there are inherent advantages to the use of AWS. One example is the Israeli Iron Dome.<sup>162</sup> Which has been in operation for years with a very high degree of accuracy.<sup>163</sup> Beyond this, one of the biggest advantages AWS have compared to humans as far as targeting is concerned, is reaction time.<sup>164</sup>

While humans can be quick to react, making decisions, and especially complex ones take time. AWS on the other hand will often be able to react far quicker, and have the ability process more information in the same amount of time. The conclusions drawn will be limited by the training to a far larger extent than a human, but in situations where time and accuracy is of critical importance the speed at which AWS can make accurate decisions is hard to overstate.

The risk of making mistakes in targeting should not be construed as a linear issue with only one solution. The Iron Dome for instance only targets missiles. And only needs to be able to identify this one type of weapon. Meaning that its task is less complex than if it was to have multiple functions. This is likely why adoption of AWS is more common in maritime warfare.<sup>165</sup> The task of distinguishing an enemy vessel in a maritime environment is generally less complex. Resulting in the most difficult parts of distinction being circumvented. This is due to the fact that naval vessels are usually either military or civilian, whereas conflicts on land in modern times often take place in urban centres where combatants, civilians, military

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<sup>162</sup> D Richemond-Barak, The Irony of the Iron Dome: Intelligent Defense Systems, Law, and Security, Harvard National Security Journal/Vol. 7, 2016.

<sup>163</sup> BBC, How Israel's Iron Dome missile shield works, 2021.

<sup>164</sup> Z Kallenborn 2021.

<sup>165</sup> S Kvalvik, The Future of Military Automation and Manpower, Naval Postgraduate School, 2018; Rand Corporation 2020, Page 64 – 65; S Goled, The State of Autonomous Weapons in today's world, AIM, 2021.

objects and civilian objects intertwine. This fact can clearly be seen in the recent and ongoing conflicts in the Middle East as well as Ukraine.

## **6 AWS in the perspective of IHL**

The goal in the following is to examine if the ICRC recommendation is reflective of obligations currently in place within IHL, or if the recommendations, if followed, would introduce new obligations.

### **6.1 Distinction with machine capabilities**

Distinction is closely linked to the issues of targeting law, but is an independent criteria. Sufficiently accurate targeting will in many cases ensure that the principles of distinction are upheld. The ICRC recommendations for an outline in predictability, limits on type of targets and limitations on situations of use are all, if not explicitly, linked to the question of distinction.

For the question of predictability the issue becomes clear, if it is not possible to sufficiently accurately determine the actions of an AWS, it becomes impossible to employ it in a way that is in accordance with distinction. The principle of distinction is, as noted above, to be judged by what was known at the time and not as a calculation of what actually happened. High civilian losses for minimal or no military gain could be accepted given the proper set of circumstances and available information. A lack of knowledge of a fact cannot be used as a defence if that ignorance lies in the active choice not to be informed. This should extend to the use of AWS, and as such a degree of predictability must be a requirement. A certain degree of predictability must therefore be a prerequisite before AWS can be employed.

As for humans it is undisputed that their “reliability” or “lack of proper judgement” is an acceptable risk. The ICRC acknowledges that requiring perfect predictability is not possible when they say that the ban is meant for AWS where “... Effects cannot be sufficiently understood, predicted and explained.”<sup>166</sup>

The recommendation of limiting types of targets has a more direct link to distinction. This recommendation would if taken to account, mean that AWS can only be employed against

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<sup>166</sup> ICRC 2021, Recommendation 1.

targets that are military objects by nature. Such a limitation would inevitably make any questions of distinction far simpler as it would remove a majority of the situations where ambiguity could cause issues.

In limiting the use to strictly military targets the contentious issue of dual use is dealt with. At least in principle. The problem with allowing the use of AWS on mixed use installations is the risk of misidentified targets. It is technically far less challenging to design a weapon that is only meant to target a tank than to have it identify any and all vehicles used by enemy combatants. Only recently we have seen the Russian armed forces make use of civilian vehicles to supplement their military ones.<sup>167</sup> All while conducting military operations in densely populated urban areas with civilians still there using their own vehicles for transportation.

There have also been instances of Russian tanks firing on civilian vehicles.<sup>168</sup> It is impossible to know for certain if the tank crew believed the vehicle to be filled by enemy combatants or not. There have however been no reports of Ukrainian combatants using civilian vehicles, had this been the case it would be far harder to give a definitive conclusion. Given the difficulties faced by humans in modern warfare the reason for hesitation to allow use of AWS against dual use objects seem clear. At times it is challenging to correctly identify combatants, and making use of AWS it is impossible to safeguard from unwanted civilian casualties if dual use targets are not prohibited.

AWS can however detect and analyse data using multiple detection points and data streams, at speeds impossible to match by humans. It is theoretically possible for AWS to outperform human combatants in distinguishing combatants and civilians. Visual data, movement patterns, facial recognition and cross referencing with known vehicles used by enemy combatants are all things that could be utilized to make identification of enemy combatants more reliable. It is also conceivable that in situations where distinction is made more difficult more stringent human supervision could be mandated in place of a ban.

One could also argue that asymmetric warfare is an area where this could cause issues.<sup>169</sup> As seen in the Middle East over the past two decades armed forces could be faced with

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<sup>167</sup> D Axe, The Russia Army Is Running Out of Trucks For Its War In Ukraine, Forbes, 2022.

<sup>168</sup> TMZ, Russian tank blows up civilian car, Kills elderly couple inside, TMZ, 2022.

<sup>169</sup> ICRC, Asymmetric warfare, ICRC, 2022b.

adversaries who possess very few, or no vehicles which are military in nature.<sup>170</sup> In such instances a blanket ban hindering all AWS utilization on dual-use targets would potentially make any use of AWS impossible faced with adversaries lacking equipment military by nature.

Further, the ICRC recommends a “... prohibition on autonomous weapon systems that are designed or used to apply force against persons.”<sup>171</sup> In reality it is unlikely that this seeming contradiction will cause issues. As the principle of proportionality stands, it is clear that attacks on military objectives are lawful even if there are substantial civilian casualties given an appropriate level of expected military advantage gained. This is despite the ban on attacking civilians. A similar interpretation of a ban on AWS used on humans should likely be the expected result in a case where such a treaty was signed.

The question still remains if a machine would be able to distinguish civilians to an acceptable level. It is impossible to know for certain, but having AWS aid in attacks can likely only serve to boost the accuracy of such attacks. With the ability to gather information, estimating numbers of combatants, military hardware present as well as civilians in a location in real time, will make it easier to make sure the principle of distinction is followed. Pattern recognition software could also be used to improve distinction, in particular between civilians and irregular combatants.<sup>172</sup> Distinction only requires the knowledge prior to the attack to indicate the lawfulness of the attack. The post factum result is without importance in determining legality. Therefore the information available and processed prior to an attack is paramount to reach the correct conclusion, and more information will likely lead to more stringent criteria for distinction.

An AWS controlled missile could be made to analyse the situation even after being fired, and if the legality of the strike changes, could self-deactivate prior to impact.<sup>173</sup> If missiles without this technology is used, any attack would be inevitable the moment it was initiated. As such it seems unlikely that AWS, in this field at least, would have a negative effect on distinction.

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<sup>170</sup> J Bell, Toyota and the Taliban: How the pickup truck became a terrorist favorite, Alarabiya News, 2021.

<sup>171</sup> ICRC 2021, Point 2.

<sup>172</sup> UNICRI, UNCCT, Countering Terrorism Online With Artificial Intelligence, UNICRI 2021.

<sup>173</sup> S Fought, Rocket and missile system, Britannica, 2018, Tactical guided missiles

Steps to achieve this have been taken. And although not a perfect parallel, simulated aerial dogfights have been conducted. With human fighter pilots versus AI, the AI won every encounter.<sup>174</sup> The pace of decision making was seen as a key reason for the result. It must be noted that the weapons allowed were limited and AI still has a long way to go before it can compete in real world scenarios. Even so it is unquestionable that AWS technology can be used to aid in improving distinction capabilities to some extent.

## 6.2 The issue of Dual Use

The question of dual use is tackled in the ICRC recommendation in their focus to limit AWS to solely having the capability of engaging targets which are “military by nature”.<sup>175</sup> Dual use is closely linked to the question of distinction.<sup>176</sup> There is a secondary issue in which autonomous systems designed for dual purposes where they perform both military and civilian functions is the issue. This aspect of the dual use discussion will not be tackled in this thesis.<sup>177</sup>

With this part of the recommendations the ICRC seeks to isolate the problems that can arise if AWS are used to engage targets in dual use areas. This comes from the fact that military targets cannot engage civilians or civilian objects.<sup>178</sup> With the clear exception being if those civilian objects are being used for military purposes as explained above. The objections to this arise from the issue of having machines decide when an objective is dual use and a legitimate target. Today there is no doubt that humans make these kinds of mistakes when considering distinction. Although, there is a fear, legitimate or not, that AWS with the capability of making this distinction will lead to a more dangerous battlefield, in particular for civilians.

This question has links to the issue of “public conscience”, some of which can be seen reflected, for instance in US military leadership.<sup>179</sup> Even so this caution, even from military leadership has yet to manifest in widespread support for legal limitations on development.

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<sup>174</sup> K Mizokami, AI vs. Human Fighter Pilot: Here’s Who Won the Epic Dogfight, Popular Mechanics 2020.

<sup>175</sup> ICRC 2021, Point 3,1.

<sup>176</sup> Manual i krigens folkerett, Forsvarssjefen, 2013, 1.22.

<sup>177</sup> J Pandya, The Dual-Use Dilemma of Artificial Intelligence, Forbes, 2019.

<sup>178</sup> CCW Amended Mines Protocol, art. 2(7) .

<sup>179</sup> Rand Corporation 2020, Page 52 – 53.

## 7 Military Necessity, Proportionality and AWS

There is no mention of military necessity within the ICRC recommendation, it is however an integral part of IHL and as such is an important part of any discussion of AWS.

To an extent, the rules of proportionality serve as the foundation of any determination of the lawfulness of an attack. What is and is not proportional is connected to both military advantage and protection of civilians. With current IHL there are no avenues to directly hinder the use of AWS, but if their use could be shown to be disproportionate their employment would be barred. If an AWS caused excessive damage, or the use had the effect of increasing the risk to civilians or civilian objects they likewise would not be allowed under current IHL norms.

Despite this even if these dangers were present in AWS during their use, they would still be allowed given the military advantage of their employment was great enough. Amongst examples of this are nuclear weapons. Although the use of nuclear weapons is banned by treaty for a certain number of states, their employment is still allowed under customary law for any nation not party to the ban.<sup>180</sup> The ICJ has however clarified that their use must be limited to fringe circumstances.<sup>181</sup> Given this clarification on nuclear weapons, there is no reason to believe that even very destructive, seemingly indiscriminate AWS, would be banned due to proportionality alone. As with other weapons and weapon systems, it will come down to the military advantage gained opposed to humanitarian considerations. It could be argued that AWS are weapons of such danger that they must be indiscriminate by nature, and therefore banned under API article 51. However such argumentation does not seem to be supported by the way AWS have been used or seems likely to be used or developed in the future.

As of now AWS are mostly used to enhance the abilities of combatants, or to control missiles or missile systems, and there is nothing in this use that would lead them to be indiscriminate by nature. Proportionality and military advantage would therefore need to be considered system to system and case-by-case.

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<sup>180</sup> Treaty on the Prohibition of Nuclear Weapons, 20 September 2017.

<sup>181</sup> ICJ, Legality of the Threat or Use of Nuclear Weapon, Advisory Opinion, 8 July 1996, Paragraph 105.

## 8 Who carries the responsibility?

The question of responsibility is not part of the ICRC recommendation. Even so it is an issue with central importance to the question of AWS. There has been discussion as to AWS in the future making decisions which are today carried by humans, and “In some cases correspond to legal obligations explicitly assigned to combatants”.<sup>182</sup> Understanding why this is and how it might be solved is central to the discussion of AWS and many of the concerns linked to them.

As for who is responsible for military attacks, in general each individual soldier is responsible for their own actions under the Geneva Conventions. In addition, commanders can be held responsible for the violations of IHL by their subordinates under customary law and certain treaties, for example API art. 86 (2).<sup>183</sup> This added responsibility of the commanders is placed upon them mainly if there is a failure to act, if the commander knew, suspected or enabled the breach of IHL.

As for the question of who are responsible for AWS, there have been many proposed solutions, with some taking it to the extreme of saying that blame needs to go all the way back to the person or persons who were responsible for coding the system.<sup>184</sup> Although this seems to be a fringe view, it does garner some support from those most critical to the use of AWS.

Others have argued that AI should be given human rights, and with that be able to hold the right to patents and so on.<sup>185</sup> While this argument mainly centres on AI outside of military use, granting AI full legal rights could, and in that case possibly should, extend to AWS. In which case the AWS would have to be held legally responsible itself. This does lead to difficult legal questions that cannot be adequately summarised here.

The solution most often proposed is for the commander, or commanders who order the use of the AWS is to be held responsible for any breaches of IHL.<sup>186</sup> This is in accordance with current IHL standards.

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<sup>182</sup> T McFarland 2020, Page 73.

<sup>183</sup> API 1997, Article 86 (2); J A Williamson, Some considerations on command responsibility and criminal liability, *International Review of the Red Cross*, 2008, volume 90, Page 305.

<sup>184</sup> P Shaw, Who IS Responsible for Lethal Autonomous Weapon Systems?, *The Defense Post*, 2021.

<sup>185</sup> J Javelosa, Should AI be Given Human Rights? This Oxford Professor Says «Yes», *Futurism*, 2016; R Abbott, Should AI be Treated the Same as Humans Legally?, *BRINK*, 2020.

<sup>186</sup> HRW, *Mind the Gap: The Lack of Accountability for Killer Robots*, HRW 2015.



The questions of distinction, targeting, military advantage, proportionality and others, still remain. But such questions would have to be asked no matter the type of weapon used, and should not present any challenges unique to AWS if resolved by placing responsibility on the commanders. It therefore seems likely this would be the solution if the question was to be resolved under current IHL.

## 9 Does IHL already cover the ICRC recommendation?

Having looked at some of the challenges for ensuring AWS is in compliance with IHL as well as more generally examined the technical aspect of AWS. Each of recommendation will be examined explicitly with a view to how much they actually differ from current IHL.

### 9.1 Unpredictable Autonomous Weapons ruled out

“Unpredictable autonomous weapon systems should be expressly ruled out, notably because of their indiscriminate effects. This would best be achieved with a prohibition on autonomous weapon systems that are designed or used in a manner such that their effects cannot be sufficiently understood, predicted and explained.”[sic]<sup>187</sup>

Within IHL there are already limitations on weapons with an indiscriminate effect as imposed by the rules of distinction.<sup>188</sup> Meaning that in this regard the proposed limitation presented by the ICRC already has a basis within IHL. The question of how this would be interpreted by the states who are the ones to dictate discourse within IHL, is a different question that has yet to be answered. The legal avenue to challenge the use of unpredictable AWS on the basis of their use being in breach of the rules of distinction is even so, already in place. As well as this there is a duty to take “all feasible precautions” to ensure the lawfulness of any attack, which further limit the ability to make use of unpredictable AWS.<sup>189</sup>

### 9.2 AWS targeting humans should be ruled out

“In light of ethical considerations to safeguard humanity, and to uphold international humanitarian law rules for the protection of civilians and combatants *hors de combat*,

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<sup>187</sup> ICRC 2021, Point 1.

<sup>188</sup> See Part 3.3, Distinction.

<sup>189</sup> API 1997, Article 57 (2).

**use of autonomous weapon systems to target human beings should be ruled out.**

This would best be achieved through a prohibition on autonomous weapon systems that are designed or used to apply force against persons.”[sic]<sup>190</sup>

There is no such legal basis in established IHL rules that could be used in place of a treaty, or other regulatory action. It could be argued that given the existence of weapon bans already in place, this could potentially be extrapolated to also cover AWS. A solution of that sort does however not seem feasible, there is no legal precedence for such a solution either. Existing weapon bans can be found in for example the “Biological Weapons Convention” which for the parties to the treaty, states that they cannot

“develop, produce, stockpile or otherwise acquire or retain ... microbial or other biological agents, or toxins... or weapons, equipment or means of delivery designed to use such agents or toxins.”<sup>191</sup>

From this it can be gathered that use of an AWS to deliver or make use of such banned weapons would already be prohibited under IHL. The same would be the case for other types of banned weapons. The use of AWS does not relinquish states from their responsibilities under customary law, or treaties they are party to. As such it could be argued that AWS, as their use is concerned, are already restricted to only such weapons not prohibited by IHL. Unless the system itself was to be considered a weapon it is the payload that would be at issue when the question of legality is considered here.

Given this it is clear that there is nothing within current IHL hindering the use of AWS against human targets specifically. The exception to this would be if the AWS is in some way used in an attempt to subvert already established norms, in which case the AWS itself would not be in breach of IHL, rather the manner it is used. Any attempt at enforcing such a restriction would require some change to current IHL, and is therefore not a legal requirement under current standards.

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<sup>190</sup> ICRC 2021, Point 2.

<sup>191</sup> Biological Weapons Convention, 10 April 1972, Article 1.

### 9.3 Autonomous Weapon Systems should be regulated

“In order to protect civilians and civilian objects, uphold the rules of international humanitarian law and safeguard humanity, **the design and use of autonomous weapon systems that would not be prohibited should be regulated...**”[sic]<sup>192</sup>

The four sub points to this recommendation will be examined individually.

This first part is a statement of intent or what they envision would be the case if regulations in line with their previous recommendations were to be put in place. If there is or is not a need for specific regulation of AWS is a question that has received considerable debate. Among other places at the CCW meetings, as well as within the EU and other notable nations and organisations.<sup>193</sup> Notably France, Germany and Sweden have all voiced concern for AWS and LAWS and given indication of support for considerations of a ban.<sup>194</sup> Despite this neither have supported initiations of negotiations for a legally binding framework.

Furthermore, the European Commission recently proposed an AI act, which deals with the question of regulatory measures for AI.<sup>195</sup> The act has not passed, but is expected to do so in its current state. There were some expectations the act might deal with the question of AWS. However in its preamble there is an explicit exception for AI developed for military or police use. In totality there seems to be a lack of will to begin the process towards binding agreements for the use, or developments of AWS among states. Combined with the lack of existing legal avenues to enforce any form of limitations in line with this part of the ICRC recommendation, it seem unlikely that such regulation will be achieved in the near future.

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<sup>192</sup> ICRC 2021, Point 3.

<sup>193</sup> US Congress, 2020; Government of the United States, Statement to the Convention on Conventional Weapons (CCW) Group of Governmental Experts (GGE) on lethal autonomous weapons systems (LAWS), Geneva, 2018; House of Lords 2018; A Dahlmann, Towards a Regulation of Autonomous Weapons – A task for the EU?, European Leadership Network, 2019.

<sup>194</sup> Government of Sweden, Statement to the Convention on Conventional Weapons Meeting of High Contracting Parties, November 13, 2019.

<sup>195</sup> The Commission Proposal of 21st April 2021, COM(2021) 206; AI Act 2021.

### 9.3.1 Types of targets

“**limits on the types of target**, such as constraining them to objects that are military objectives by nature”. There is nothing within current IHL prohibition or limiting the use of AWS to targets that are “military object by nature”[sic]<sup>196</sup>

There is reason to believe that some target limitations are in place today. US navy officials have stated that they are careful not to put too much trust in automated systems.<sup>197</sup> These limitations do however, seem unlikely to reach the level recommended by the ICRC. The amount of credence given to these kinds of statements should be also moderate. But there is no question that even within the military communities there is a certain amount of scepticism connected to the implementation of AWS. With this there is reason to suspect that at least for the time being, some degree of self-regulation and restraint will be exercised by military commanders. Assuming this to be true, it should not be perceived as a solution comparable to regulation. No matter if the arguments for or against a treaty are to be presumed, it is clear that a treaty has a far greater ability to impose universal checks and balances than self-restraint.

### 9.3.2 Scale of use

“**limits on the duration, geographical scope and scale of use**, including to enable human judgement and control in relation to a specific attack”.<sup>198</sup>

There are many types of AWS, amongst the most common are drones. These systems can gather intelligence, conduct surveillance, and carry out attacks.<sup>199</sup> All while being unmanned, meaning that there is no risk to the lives of the combatants controlling them. Today only a limited amount of drones are automated, and most have some form of human control, to a smaller or larger extent. Even so these systems are limited by range, and carrying capacity.<sup>200</sup>

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<sup>196</sup> ICRC 2021, Point 3.1.

<sup>197</sup> D B Larter, The US Navy says it’s doing its best to avoid a ‘Terminator’ scenario in quest for autonomous weapons, DefenseNews, 2019.

<sup>198</sup> ICRC 2012, Point 3,2.

<sup>199</sup> T McFarland 2020, Autonomy and Control.

<sup>200</sup> Different Types of Military Drones: Explained In Details (April 2022), Propel RC, 2022; A Blessing in the Skies? Challenges and Opportunities in Creating Space for UAVs in the Netherlands, The Hague Security Delta, 2016.

Due to the nature of drones they are generally speaking small. One of the criticisms levied is the way drones are piloted.<sup>201</sup> In the case of the US in the Middle East, the pilots would be stationed within the continental US while carrying out the attacks on a different continent.

The limitations imposed by the design of the AWS or its capabilities is not what the ICRC is referring to here. Neither is the limitations imposed on AWS by pre-existing weapons bans. It is possible for states to self-impose restrictions, but that can in no way be seen as a solution to this supposed problem. Therefore, a treaty would be needed to regulate these limitations.

The question of human involvement could be a different matter. Here the recommendation only goes so far as to suggest the ability to “enable human judgement and control” for “specific attacks”. A limitation of this kind does not have any direct support in IHL, but almost every nation, to some extent, voice support for an understanding that all weapon systems require, as the US states “broader human involvement”.

It seems unlikely that states will create systems where human control is removed completely. Autonomy will likely be granted, but with the current understanding amongst states it seems that at least some form of oversight functionality would be considered a requirement. If that is used as the basis, a system that is completely free of any human oversight would be in breach of IHL. This does not mean that every attack would require humans to be directly involved, but it would likely mean that the ability to do so is a necessity.

### 9.3.3 Situations of use

“**limits on situations of use**, such as constraining them to situations where civilians or civilian objects are not present”[sic]<sup>202</sup>

There is a clear link between this recommendation and IHL already in place with limitations on warfare found within the rules of proportionality. Any attack on civilians or civilian objects would already be considered a breach of IHL. It seems apparent that the ICRC seeks to go further than this. And instead of banning use to where military advantage allows for attacks, they would restrict AWS to situations where no degree of military advantage would justify the use of AWS so long as civilians or civilian objects are present.

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<sup>201</sup> E. Pilkington, Life as a drone operator: 'Ever step on ants and never give it another thought?', The Guardian, 2015

<sup>202</sup> ICRC 2021, Point 3,3.

Caution should be exercised when making definitive statements. In this case it could be argued that the recommendation is a step too far. As long as an AWS does not make use of weaponry that would for other reasons preclude them from use, banning AWS in situations with no civilian objects or civilians present would be contrary to the objectives of war. It is clear that war is not desirable, and the wish to constrict it to only the most humanitarian conduct possible for something so inherently inhumane is understandable. Such a limitation would however render AWS mostly useless in a modern war, and it seems highly unlikely that any state with the capability to obtain AWS would agree to such a limitation.

### 9.3.4 Requirements for human-machine interaction

“**requirements for human-machine interaction**, notably to ensure effective human supervision, and timely intervention and deactivation.”[sic]<sup>203</sup>

Due to the near consensus amongst nations that there is a requirement for some degree of human interaction, this recommendation could arguably be said to already have support within IHL. Of note is the fact that the statements of these nations do not go quite as far as the ICRC. However the statements made could be interpreted in concordance with the recommendation. In either case it seems unlikely any weapon, autonomous or not, would be designed without any failsafe, or ways of deactivation. To which extent the control is present, or how closely an AWS will need to be monitored is not clear. But there seems to be no contradiction beyond implied intent, for the consensus of the states and the ICRC when it comes to “human-machine interaction”.

Given this it could be said that although the requirement for human interaction likely isn't a requirement under IHL at the moment, the actions of the nation states, as well as their public statements, could mean it is in the process of becoming customary law.

## 10 Legal Challenges of a Ban

There seems to be a clear consensus among the bigger military nations, namely USA, China, Russia, the UK and that a ban on AWS is not desirable to them.<sup>204</sup> Nations who support for a ban are generally smaller nations, both in militarily and financially. Nations like France and

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<sup>203</sup> ICRC 2021, Point 3,4.

<sup>204</sup> See Part 4, What are AWS?.

Germany are notable exceptions, voicing supporting of a ban, but they have been criticised for not taking further action.<sup>205</sup>

There are many legal challenges that arise when discussing the potential for a ban of AWS. Chief amongst them being the lack of hard, and soft law directed towards AWS. This is not just the case at the international level, which is where a ban would have to be mandated, but also at a national level. Exactly why this might be is unclear, but it could be speculated that nobody wants to take the first step and risk being militarily outmatched in a future conflict.

Furthermore, even national and multinational legislation, such as the AI act currently being discussed in the EU, which seeks to legislate the use of AI and related technologies. Both in terms of limiting what the technology can be used for, and keeping track of developments and placing the EU in a position to be a “market leader” within such technology.<sup>206</sup> Excludes technologies meant for military or police use. Meaning that it will have no impact on AWS at the EU level. Subsequently the lack of change will likely contribute to the lack of incentive to initiate change at the international level. This lack of international law or customary law directly effecting AWS, means that it is necessary to turn to the more general provisions of IHL for guidance. The guidance provided by these provisions are however not clear, and are open for interpretation.

Some argue that the provisions would make a ban, not only possible, but necessary, while other seem to air on the side of a ban being impossible.<sup>207</sup> The truth is likely somewhere in-between these two extremes. It would likely be possible to enact a full or partial ban on AWS using current IHL norms. Although that would necessitate a development in customary law at a minimum.

An example here could be the St. Petersburg accord where the biggest military powers of the time decided to meet up and create new rules that would guide IHL from then on. This was a landmark moment in the history of multinational cooperation to create binding agreements for the rules of warfare. Presuming the political will to be present there is no reason to believe a similar accord for AWS would be impossible possible today.

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<sup>205</sup> J Delcker, France, Germany under fire for failing to back ‘killer robots’ ban, Politico, 2018.

<sup>206</sup> AI Act 2021, Forword.

<sup>207</sup> T McFarland 2020, Page 175 – 180; A Etzioni, Pros and Cons of Autonomous Weapons, Army University Press, 2017; Stop Killer Robots, Less Autonomy, More Humanity, 2022; J Deckler 2018.

## 11 Final summation

For the past century, dating as far back as the first world war, attempts have been made at creating “autonomous” weapons.<sup>208</sup> This was first seen in pilotless planes, and during the Vietnam war the US military made use of unmanned drones to spread propaganda.<sup>209</sup> Then in the early 21<sup>st</sup> drones saw widespread use and garnered much media attention during the wars of the Middle East.<sup>210</sup>

The use of drones has received much criticism and the idea of autonomous drones has been given much attention by groups like HRW.<sup>211</sup> Despite this criticism, use of drones and particularly drones with limited autonomous capabilities, seem to grow more prevalent.

In naval contexts, most systems are already autonomous to some degree.<sup>212</sup> Land and air-based warfare seems likely to follow. In addition to the implementation of drones, the same development can be seen in 5<sup>th</sup> generation fighter jets like the F-35. Which among others carry the “Joint Strike Missile”. A missile that reportedly employs “autonomous target recognition”.<sup>213</sup>

These developments and rapid adoption of AWS technology is likely the reasons for the release of the strongly worded recommendation by the ICRC. It was not their first time speaking on autonomous weapons, but it was the first time they spoke with such clarity.<sup>214</sup>

For the question of drones specifically it has been argued that the implementation of drone swarms would be a powerful weapon.<sup>215</sup> How far along such autonomous technology has come is difficult to say with certainty. However, drone swarm have already been used for civilian purposes.<sup>216</sup> One of the main advantages of drones is their relatively low cost compared to potential military advantage. A drone swarm could be equipped with explosives and be sent out to sink an enemy battleship. If successful the cost of the drones would be only

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<sup>208</sup> Are Drones the Future of Warfare?, The Inquiry, 2022.

<sup>209</sup> D Axe, Drone War Vietnam, U.S Naval Institute 2021, for a more in depth view of the subject

<sup>210</sup> The Bureau of Investigative Journalism, Drone strikes in Afghanistan 2015 – 2022.

<sup>211</sup> P Rudolf, Killing by Drones: The Problematic Practice of U.S. Drone Warfare, Human Rights Watch, 2014.

<sup>212</sup> Y Dinstein, Oslo Manual on Select Topics of Armed Conflict Rules and Commentart, Springer Nature 2020, page 43.

<sup>213</sup> Raytheon Missile & Defense, Joint Strike Missile, 2022.

<sup>214</sup> ICRC, States must address concerns raised by autonomous weapons, 2019.

<sup>215</sup> Z Kallenborn, A partial Ban on Autonomous Weapons would make everyone safer, 2020.

<sup>216</sup> Z Kallenborn, 2020.



a fraction of the cost of a battleship.<sup>217</sup> Combined this the size of a drone and the relative difficulty in spotting them on radar it becomes clear why this technology is so appealing.<sup>218</sup>

In recent times, small drones meant for the civilian market has reportedly been used to great effect in the war in Ukraine.<sup>219</sup> With modifications to readily available civilian drones, some of which have autonomous capabilities meant for civilian use which could, theoretically be utilized for military purposes.<sup>220</sup> With such options available it seems unlikely any ban could effectively be enforced in a warzone. This type of drone also challenges the ICRC recommendation in how it would relate to the issue of dual use, predictability and other limitations.

Reports have also come out that Taiwan is looking to invest heavily in their drone fleet as a direct result of lessons learned from the Ukrainian war.<sup>221</sup> It is unknown to what extent these drones will be autonomous, however it seems likely they will be equipped with some autonomous capabilities, while maintaining remote control by pilots. However, it is of note that autonomous drones have already been used to carry out terrorist attacks.<sup>222</sup> Showing that “fire and forget” drones can be achieved at low cost already.

The importance of this comes as a totality of everything mentioned above. The use of unmanned drones and especially autonomous drones gives smaller and poorer nations a way of matching, or nullifying bigger nations military advantages, contributing to an equalization of military power. This effect is also present for larger nations, where the drones force multiplication can be used to further widen the gap between themselves and potential adversaries.

This is perhaps the main reason efforts to ban of AWS seem unlikely to succeed. Military powers like the US or China would likely not risk their status as military hegemony in their spheres of influence by limiting autonomous technology. Smaller nations would be unwilling

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<sup>217</sup> Team Crane, UAV SWARM ATTACK: PROTECTION SYSTEM ALTERNATIVES FOR DESTROYERS, Naval Postgraduate School, 2012.

<sup>218</sup> 911 Security, Detect Drones Using Radar Sensors.

<sup>219</sup> D Axe, Ukraines’s \$10,000 Drones Are Droppong Tiny Bombs On Russian Troops, Forbes, 2022; J Borger, The drone operators who halted Russian convoy headed for Kyiv, The Guardian, 2022.

<sup>220</sup> F Corrigan, 12 Best Follow Me Drones And Follow You Technology Reviewed, Dronezone, 2020.

<sup>221</sup> L Chung, Taiwan looks to develop militart drone fleet after drawing on lessons from Ukraines’s war with Russia, South China Morning Post, 2022; United States approves \$600m sale of armed drones to Taiwan, Aljazeera, 2020.

<sup>222</sup> Attack on Russian Naval Station with Drones, Global Terrorism Database, START, 2018.

to relinquish what is a relatively cheap technology, enabling them to fight adversaries they otherwise could never match militarily.<sup>223</sup>

Nations who support such action are therefore unlikely to succeed. Any ban would require universal adoption to have meaningful effect. The difficulties can be demonstrated by the modern attempted at banning landmines.<sup>224</sup> The treaty saw some success with a majority of nations signing it. However, some held out, amongst them Russia and the US. Consequently, the treaty cannot become customary law at this time. Even treaties with unilateral support can be difficult to enforce. An example of this is a reported chemical weapons attack conducted by Russian troops in Ukraine despite Russia being party to the CWC.<sup>225</sup>

It seems therefore as if AWS will be an inevitability on the battlefield of the future. Any attempt at a prohibition seems unlikely to succeed or garner the support needed to make meaningful headway.

There is however reason to believe that AWS are already limited to some extent by existing IHL, with military leadership and nations already agreeing on the existence of some limitations on autonomy. In totality, it seems current IHL and customary law would not allow for a scenario with no human oversight.<sup>226</sup> The ICRC recommendations could therefore serve as a vessel to further debate and discussion on the topic of AWS. It could also have the potential effect of aiding in facilitating a shift in customary law to where more of their recommendation is interpreted to be in concordance with it.

It seems that the ICRC recommendation will have a limited direct effect on AWS and their legal status within IHL at the current time. It also seems unlikely that the entirety of the recommendation will have a significant effect. However there is support amongst some nations for restrictions on the use and development of AWS beyond what is currently the case in IHL. As such it seems likely the recommendation will have some effect in serving as guidance for future discussions and potential attempts at regulation.

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<sup>223</sup> Team Crane 2012.

<sup>224</sup> The Ottawa convention.

<sup>225</sup> Convention on the prohibition of the development, production, stockpiling and use of chemical weapons and on their destruction, Paris, 13 January 1993.

<sup>226</sup> See Part 3, Current state of IHL; D B Larter, The US Navy says it's doing its best to avoid a 'Terminator' scenario in quest for autonomous weapons, DefenseNews, 2019.

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