

## ARE AUTONOMOUS WEAPON SYSTEMS THE SUBJECT OF ARTICLE 36 OF ADDITIONAL PROTOCOL I TO THE GENEVA CONVENTIONS?

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*“If man does not master technology, but allows it to master him, he will be  
destroyed by technology.”<sup>1</sup>*

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<sup>1</sup> JEAN DE PREUX ET AL., ICRC COMMENTARY ON THE ADDITIONAL PROTOCOLS OF 8 JUNE 1977 TO THE GENEVA CONVENTIONS OF 12 AUGUST 1949 ¶¶ 427-28 (Yves Sandoz, Christophe Swinarski, & Bruno Zimmerman eds., 1987).

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## I. INTRODUCTION

States have an obligation to conduct a legal review of all new weapons to ascertain the legality of the weapons and also to determine whether their use will violate international law. In this paper, I seek to answer two main questions: First, I ask whether fully autonomous weapon systems (“AWS”) are *stricto sensu* weapons for the purposes of conducting the legal review as required by Article 36 of Additional Protocol I to the Geneva Conventions.

Second, I ask whether fully AWS are within the confines of the basic rules of weapons law – that is, the rule proscribing weapons that are indiscriminate in nature and weapons that cause superfluous harm or unnecessary suffering. I also seek to draw the important distinction between the basic rules of international weapons law listed above and the targeting rules of international humanitarian law as applicable to combatants. Understanding that difference and answering the two questions referred to above is an important first step towards finding an appropriate response to AWS technology.

### A. *The legal obligation to conduct legal review of new weapons*

The state obligation to conduct a legal review of new weapons exists both in customary and treaty international law.

#### 1. Customary International Law

The obligation to conduct a legal review of new weapons to ascertain whether they are in compliance with international law is considered to be a customary obligation.<sup>2</sup> Treaty law on the obligation to conduct a legal

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<sup>2</sup> G.H. Todd, *Armed Attack in Cyberspace: Deterring Asymmetric Warfare with an*

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review of new weapons is argued to have only codified a pre-existing customary obligation.<sup>3</sup> Even states like the US that have not ratified treaties that provide for this obligation are still bound because the obligation is part of customary international law.<sup>4</sup> Thus, with the aim of ensuring that a new weapon and its intended use is in line with customary international law,<sup>5</sup> the US reviews all new weapons in line with the customary law requirement<sup>6</sup> as codified in its military instructions, manuals and regulations.<sup>7</sup>

The International Court of Justice (“ICJ”) also recognized the customary nature of the obligation to conduct a legal review of any weapon that a state intends to acquire or develop, noting that the obligation is applicable to “all kinds of weapons. . . those of the present and those of the future.”<sup>8</sup> As far back as 1964, the Tokyo District Court held that the United States’ nuclear bombing of Hiroshima and Nagasaki not only violated international humanitarian law (“IHL”), in particular, targeting rules but also the customary obligation to conduct a legal review of weapons before their

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*Asymmetric Definition*, 64 A.F. LAW REV. 65, 80 (2009); W.H. Parks, *Conventional Weapons and Weapons Reviews*, 8 YEAR BOOK OF INT’L HUMANITARIAN LAW 55; M.J. Matheson, *The United States Position on the Relation of Customary International Law to the 1977 Protocols Additional to the 1949 Geneva Conventions*, 2 AMSTERDAM U. J. INT’L LAW AND POL’Y 419, 420 (1987); Royal Australian Air Force, *Operations Law for RAAF Commander*, PUBLICATION 1003 ¶ 9.5 (2004); D. Blake & J.S. Imburgia, *Bloodless Weapons? The Need to Conduct Legal Reviews of Certain Capabilities and the Implications of Defining Them as Weapons*, 66 A.F. LAW REV. 163 (2010).

<sup>3</sup> W.H. Parks, *Conventional Weapons and Weapons Reviews*, 8 YEAR BOOK OF INT’L HUMANITARIAN LAW 57 (2005); *See also* D. Blake & J.S. Imburgia, *Bloodless Weapons? The Need to Conduct Legal Reviews of Certain Capabilities and the Implications of Defining Them as Weapons*, 66 A.F. LAW REV. 164 (2010).

<sup>4</sup> The US and Sweden already had legal review mechanisms as early 1974 before Additional Protocol I to the Geneva Conventions came into force, which in Article 36 requires legal review of new weapons. *See also* G.H. Todd, *Armed Attack in Cyberspace: Detering Asymmetric Warfare with an Asymmetric Definition*, 64 A.F. LAW REV. 80 (2009); W.H. Parks, *Conventional Weapons and Weapons Reviews*, 8 YEAR BOOK OF INT’L HUMANITARIAN LAW 55; D. Blake & J.S. Imburgia, *Bloodless Weapons? The Need to Conduct Legal Reviews of Certain Capabilities and the implications of Defining Them as Weapons*, 66 A.F. LAW REV. 164 (2010).

<sup>5</sup> W.H. Parks, *Joint Service Shotgun Program*, THE ARMY LAW. 16 (1997).

<sup>6</sup> *Id.*

<sup>7</sup> U.S. Department of the Navy, *Implementation and Operation of the Defense Acquisition System and the Joint Capabilities Integration and Development System*, SEC’Y OF THE NAVY INSTRUCTION 5000.2c, ¶ 2.6.2; U.S. Department of Defense, *The Defense Acquisition System*, DIRECTIVE 5000.01, ¶ e1.1.1; U.S. Department of Defense, *Weapons Review*, INSTRUCTION 51-504 (1994); U.S. Department of the Army, *Review of Legality of Weapons under International Law*, REGULATION 27-53, ¶ 3.a (1979).<sup>8</sup> *Legality of the Threat or Use of Nuclear Weapons*, Advisory Opinion, 1996 I.C.J. Rep. 226, 254, 259, 262.

<sup>8</sup> *Legality of the Threat or Use of Nuclear Weapons*, Advisory Opinion, 1996 I.C.J. Rep. 226, 254, 259, 262.

use.<sup>9</sup>

## 2. Treaty Law

Treaty obligation to review legality of new weapons dates back to 1868 when the International Military Commission adopted the St. Petersburg Declaration which, in regard to the development of new technologies noted:

The Contracting or acceding parties reserve to themselves to come hereafter to an understanding whenever a precise proposition shall be drawn up in view of future improvements which science may effect in the armament of troops in order to maintain the principles which they have established, and to conciliate the necessities of war with the laws of humanity.<sup>10</sup>

The modern form of the obligation is found in Article 36 of Additional Protocol I to the Geneva Conventions. Article 36 advocates for a preventative approach when it comes to weapons which states may use in armed conflict. It provides as follows:

In the study, development, acquisition or adoption of a new weapon, means or method of warfare, a High Contracting Party is under an obligation to determine whether its employment would, in some or all circumstances, be prohibited by this Protocol or by any *other rule of international law* applicable to the High Contracting Party. (Emphasis Added)

This obligation is fundamental especially in the current age where military technology continues to proliferate. Noting the rapid developments in military technologies and how some of the technologies end up causing harm to civilians and unnecessary suffering to combatants, in both the 27<sup>th</sup> and 28<sup>th</sup> International conferences of 1999 and 2003 respectively, the Red Cross and the Red Crescent called on states to establish within their jurisdictions, mechanisms and procedures that allow them to conduct legal reviews of new weapons and ascertain their legality beforehand.

According to the International Committee of the Red Cross (“ICRC”), Article 36 of Additional Protocol I “implies the obligation to establish internal procedures for the purposes of elucidating the issue of legality, and other contracting parties can ask to be informed on this point.”<sup>11</sup> There are very few states that currently have these mechanisms to date. Among the

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<sup>9</sup> *Shimoda v. State of Japan*, 8 JAPAN ANN. INT’L LAW 242 (1964).

<sup>10</sup> ICRC, *Declaration Renouncing the Use, in Time of War, of Explosive Projectiles under 400 Grammes Weight* (Dec. 11, 1868).

<sup>11</sup> ICRC, *supra* note 1, at ¶¶ 1470, 1482.

ones that have are the US,<sup>12</sup> Norway,<sup>13</sup> Belgium,<sup>14</sup> Sweden,<sup>15</sup> Australia,<sup>16</sup> and the Netherlands.<sup>17</sup> This, however, does not detract from the binding nature of Article 36, which is deemed to apply to *all* states irrespective of whether they are a party to Additional Protocol I.<sup>18</sup>

### 3. Article 36: Scope of Application

It has been pointed out that Article 36 only relates to the *employment* of weapons and that “mere possession does not technically trigger Article 36 requirements.”<sup>19</sup> However, such arguments may not be valid because Article 36’s scope of application is considered broad: it applies to the research, development, modification, procurement, or purchase of weapons or weapon systems and how it is to be used, whether it is lethal or non-lethal, anti-personnel, or material.<sup>20</sup> Where a state enters into a new treaty that may have implications for weapons in its possession, it is obliged to conduct a legal

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<sup>12</sup> U.S. Department of the Navy, *Implementation and Operation of the Defense Acquisition System and the Joint Capabilities Integration and Development System*, SEC’Y OF THE NAVY INSTRUCTION 5000.2c (2007); U.S. Department of Defense, *The Defense Acquisition System*, DIRECTIVE 5000.01 (2003); U.S. Department of Defense, *Directive Policy for Non-Lethal Weapons*, DIRECTIVE 3000.3 (1996); U.S. Department of the Air Force, U.S. Weapons Review, INSTRUCTION 51-402 (1994); U.S. Department of Army, *Regulation Legal Services: Review of Legality of Weapons under International Law*, REGULATION 27-53 (1979); and U.S. Department of Defense, *Review of Legality of Weapons under International Law*, INSTRUCTION 5500.15 (1974).

<sup>13</sup> See ICRC, *A Guide to the Legal Review of New Weapons, Means and Methods of Warfare: Measures to Implement Article 36 of Additional Protocol I of 1977*, 88 INT’L REV. OF THE RED CROSS, 864, 934 n. 8 (2006) (referencing The Norway Ministry of Defence Directive on the Legal Review on Weapons, Methods and Means of Warfare (Direktiv om folkerettslig vurdering av vapen, krigforingsmetoder og krigforingsvirkemidler) (2003)).

<sup>14</sup> See *id.* (citing De’fense, Etat-Major de la De’fense, *Ordre Ge’ne’ral - J/836* (18 July 2002), which established La Commission d’Evaluation Juridique des nouvelles armes, des nouveauxmoyens et des nouvelles me’thodes de guerre).

<sup>15</sup> See *id.* (citing The Swedish Ordinance on International Law Review of Arms Projects, Swedish Code of Statutes 536. (Förordning om folkrättslig granskning av vapenproject) (1994)).

<sup>16</sup> See *id.* (citing The Australian Department of Defence Instruction on Legal Review of New Weapons OPS 44-1 (2005)).

<sup>17</sup> See *id.* (referencing The Directive of the Minister of Defence nr. 458.614/A which established the Committee for International Law and the Use of Conventional Weapons (Beschikking van de Minister van Defensie, Adviescommissie Internationaal Recht en Conventioneel Wapengebruik) (1978)).

<sup>18</sup> *Id.* at 933.

<sup>19</sup> Blake & J.S. Imburgia, *Bloodless Weapons? The Need to Conduct Legal Reviews of Certain Capabilities and the Implications of Defining Them as Weapons*, 66 A.F. L. REV. 168 (2010).

<sup>20</sup> ICRC, *supra* note 13, at 937.

review. In practice, that legal review is conducted “whenever [weapons] are being studied, developed, acquired or adopted.”<sup>21</sup>

Now that Article 36 is found in Additional Protocol I, which is applicable to international armed conflicts, questions have also been raised as to whether the obligations of Article 36 are applicable to weapons designed to be used in non-international armed conflict. The acceptable argument is that the obligation to review new weapons as enunciated in Article 36 is applicable even for weapons that are meant to be used in non-international armed conflict. In *Prosecutor v. Tadic*, a case that considered the legality of nuclear weapons, the judges observed that “what is inhumane, and consequently proscribed, in international wars, cannot but be inhumane and inadmissible in civil strife.”<sup>22</sup> As far back as 1899, with the exception of the British delegate, during the negotiation of the Hague Declaration concerning expanding bullets, states in attendance made it clear that it would be “contrary to the humanitarian spirit” to ban the expanding bullets in international armed conflict while allowing them in non-international armed conflict.<sup>23</sup> Likewise, the ICRC has observed that “most of the [IHL] rules apply to all types of armed conflict.”<sup>24</sup> This consideration is important to most unmanned systems whose application in the foreseeable future is more likely to non-international armed conflict, in pursuit of terrorists for example.

In as much as it is paramount to conduct a legal review of new weapons, it does not mean that any material in the possession of the state or which a state intends to possess must be subjected to Article 36 review. To this end, D. Blake and J.S. Imburgia observe that the first and foremost consideration is whether a particular piece of material qualifies as a weapon or means of warfare for the purposes of Article 36 assessment.<sup>25</sup>

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<sup>21</sup> ICRC, *Legal Review of New Weapons: Scope of the Obligation and Best Practices*, HUMANITARIAN LAW & POL’Y (Oct. 6, 2016), <http://blogs.icrc.org/law-and-policy/2016/10/06/legal-review-new-weapons/>.

<sup>22</sup> *Prosecutor v. Tadić*, Case No. IT-94-I Decision on Defence Motion for Interlocutory Appeal on Jurisdiction, ¶ 119, 127 (Int’l Crim. Trib. for the Former Yugoslavia Oct. 2 1995) [hereinafter Nuclear Weapons case].

<sup>23</sup> R. Coupland & D. Loye, *The 1899 Hague Declaration Concerning Expanding Bullets: A Treaty Effective for more than 100 Years Faces Complex Contemporary Issues*, 849 INT’L REV. OF THE RED CROSS 135, 137 (2003) (referencing WILLIAM CROZIER, REPORT TO THE UNITED STATES’ DELEGATION TO THE FIRST HAGUE CONFERENCE ON THE PROCEEDINGS OF THE FIRST COMMISSION AND ITS SUB-COMMISSION (1899)).

<sup>24</sup> ICRC, *A Guide to the Legal Review of New Weapons, Means and Methods of Warfare: Measures to Implement Article 36 of Additional Protocol I of 1977*, 88 Int’l Rev. of the Red Cross 864, 939 (2006).

<sup>25</sup> See Blake & Imburgia, *supra* note 4, at 168.

## II. ARE AUTONOMOUS WEAPONS SYSTEMS STRICTO SENSU “WEAPONS” FOR THE PURPOSES OF ARTICLE 36 REVIEW?

The ICRC has anticipated situations where a state is not clear as to whether the capability under consideration is a weapon for the purposes of a new weapons legal review.<sup>26</sup> In the same way, where experts have long expressed their concerns about “future arms” where technological developments fuel an arms race, where states develop and adopt weapons “for the sole reason that they exist or because of a fear that others will develop them,”<sup>27</sup> it is doubtful whether states will properly conduct weapons review. The situation is exacerbated by the fact that it is not clear whether some of such arms qualify as weapons, means or method of warfare.<sup>28</sup> As a solution, the ICRC suggests that the state in doubt should consult with the weapons review authority.<sup>29</sup> This solution is limited since, as noted above, not so many states have such an authority.

In 1999, the US Department of Defense Office of General Counsel also highlighted the uncertainties that existed regarding the use of the term “weapon” and its applicability to certain types of operational cyberspace capabilities.<sup>30</sup> Many years later, this uncertainty still exists,<sup>31</sup> and it is unfortunate that fully autonomous weapons or weapon systems with increased autonomy may present the same legal ambiguity as to whether they can be described as “weapons” for the purposes of Article 36 legal review or not. In my view, the question as to whether or not fully autonomous weapon systems or those with increased autonomy should be considered as weapons or means of warfare is fundamental because that categorization has far reaching implications.

To understand whether a thing qualifies as a weapon for the purposes of Article 36 legal review, it is important to understand what “weapon” or “means and methods of warfare” are.<sup>32</sup> Although Article 36 uses the terms “weapon, means or method of warfare,” no definition is provided for them in the Protocol.

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<sup>26</sup> ICRC *supra* note 13, at 937.

<sup>27</sup> JEAN DE PREUX ET AL., *supra* note 1, at 427.

<sup>28</sup> Not everything that can cause harm qualifies as a weapon for the purposes of Article 36 Review. Understanding the difference between weapons, means and methods of warfare becomes critical.

<sup>29</sup> ICRC, *supra* note 13.

<sup>30</sup> U.S. DEP’T OF DEF., OFF. OF GEN. COUNS., AN ASSESSMENT OF INTERNATIONAL LEGAL ISSUES IN INFORMATION OPERATIONS 8 (1999).

<sup>31</sup> Blake & Imburgia, *supra* note 4, at 159.

<sup>32</sup> Protocol Additional to the Geneva Conventions of 12 August 1949, and Relating to the Protection of Victims of International Armed Conflicts, June 8, 1977, Article 36 [hereinafter Geneva Protocol].

A. *Definition of weapon, means, and method of warfare*

The meaning of a *weapon* as provided in the dictionary is that it is “a thing designed or *used* for inflicting bodily harm or physical damage; a means of gaining an advantage or defending oneself.”<sup>33</sup>

International law, however, does not offer any definition of a weapon and the term is unclear across the international community, as each state tends to have its own definition.<sup>34</sup> The following are some of the definitions that have been provided by states.

*Australia* refers to a “weapon as an offensive or defensive instrument of combat *used* to destroy, injure, defeat or threaten. It includes weapon systems, munitions, sub-munitions, ammunition, targeting devices, and other damaging or injuring mechanisms.”<sup>35</sup>

*Belgium* defines a “weapon” “as any type of weapon, weapon system, projectile, munition, powder or explosive, designed to put out of combat persons and/or materiel.”<sup>36</sup> *Norway* defines the word “weapons” “as any means of warfare, weapons systems/ project, substance, etc. which is particularly suited for *use* in combat, including ammunition and similar functional parts of a weapon.”<sup>37</sup>

Within the various US departments, there is no single overarching definition of a weapon. For example, the following definitions exist: *The United States Navy* defines a “weapon” as “all arms, munitions, material, instruments, mechanisms, or devices that have an intended effect of injuring, damaging, destroying or disabling personnel or property.”<sup>38</sup> *The US Army* refers to weapons as “chemical weapons and all conventional arms, munitions, material, instruments, mechanisms, or devices, which have an intended effect of injuring, destroying, or disabling enemy personnel, materiel, or property.”<sup>39</sup> While explicitly excluding electronic warfare devices, the United States Air Force defines a weapon “as devices designed to kill, injure, or disable people, or to damage or destroy property.”<sup>40</sup> The *US*

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<sup>33</sup> *Weapon*, Concise Oxford Dictionary (11th ed. 2006).

<sup>34</sup> ICRC, *supra* note 13.

<sup>35</sup> *Id.* (referencing Subsection 3(a) of the Australian Instruction).

<sup>36</sup> *Id.* (referencing Subsection 1(a) of the Belgian General Order).

<sup>37</sup> *Id.* (referencing Subsection 1.4 of the Norwegian Directive).

<sup>38</sup> U.S. Department of Navy, *Implementation and Operation of the Defense Acquisition System and the Joint Capabilities Integration and Development System*, SEC’Y OF THE NAVY INSTRUCTION 5000.2c ¶ 2.6.2; see also W.H. Parks, *Office of The Judge Advocate General of the Army, Weapons Review Programme of the United States*, presented at the Expert Meeting on Legal Reviews of Weapons and the STrUS Project, Jongny sur Vevey, Switzerland, 29–31 January 2001 (on file with the ICRC).

<sup>39</sup> U.S. Department of Army, *Review of Legality of Weapons under International Law*, REGULATION 27-53 ¶ 3.a. (1979)

<sup>40</sup> US Department of Air Force, *Weapons Review*, INSTRUCTION 51-504 at 2 (1994),

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*Department of Defense Directive on Legal Review of Non-Lethal Weapons* states: “Weapons that are explicitly designed and primarily *employed* so as to incapacitate personnel or materiel, while minimizing fatalities, permanent injury to personnel, and undesired damage to property and the environment.”<sup>41</sup>

The US also expressly provides that even weapon systems must be subjected to a weapon review.<sup>42</sup> The US Department of Defense defines weapons systems as:

[the] weapon itself and those components required for its operation, including new, advanced or emerging technologies which may lead to the development of weapons or weapon systems and which have significant legal and policy implications. [Weapon] systems are limited to those components or technologies having a *direct injury* or damaging effect on people or property (including all munitions and technologies such as projectiles, small arms, mines, explosives, and all other devices and technologies that are physically destructive or injury producing).<sup>43</sup>

The inclusion of weapon systems under the scope of Article 36 has been justified by the ICRC and a number of commentators. This is more acceptable where it can be noted that the language in Article 36 of Additional Protocol I is broader if compared to the preceding Article 35 of the same protocol. While in Article 35 the terms “weapons, projectiles and material and methods of warfare” are used, Article 36 uses “weapon, means or method of warfare”.<sup>44</sup> Arguably, by using such language, the drafters of Article 36 intended it to “encompass more than just material, projectiles, or kinetic kill vehicles.”<sup>45</sup>

There are also a number of commentators who have attempted to define a weapon. Justin McClelland observes that deciding whether a particular thing constitutes a weapon is “a relatively straightforward process. The term connotes an offensive capability that can be *applied* to a military [objective] or enemy combatant.”<sup>46</sup> According to W.H. Boothby, the means by which

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available at [https://webapp1.dlib.indiana.edu/virtual\\_disk\\_library/index.cgi/821003/FID177/pubs/af/51/afpd51-4/afpd51-4.pdf](https://webapp1.dlib.indiana.edu/virtual_disk_library/index.cgi/821003/FID177/pubs/af/51/afpd51-4/afpd51-4.pdf).

<sup>41</sup> U.S. Department of Defense, *Policy for Non-Lethal Weapons*, DIRECTIVE 3000.3 ¶ 5.6.2.

<sup>42</sup> See ICRC, *supra* note 13.

<sup>43</sup> *Id.* at 937 n. 17.

<sup>44</sup> See Geneva Protocol, Articles 35, 36.

<sup>45</sup> Blake & Imburgia, *supra* note 4, at 171.

<sup>46</sup> J. McClelland, *The Review of New Weapons in Accordance with Article 36 of Additional Protocol I*, 85 INT’L REV. OF THE RED CROSS 397 (2003).

such an offensive is applied to a military objective or enemy is what constitutes a weapon and may be in the form of “. . . a device, munition implement, substance, object or piece of equipment.”<sup>47</sup>

The Humanitarian Policy and Conflict Research (“HPCR”), a non-profit organization, has defined a weapon as “a means of warfare *used* in combat operations, including a gun, missile, bomb or other munitions, that is capable of causing either (i) injury to, or death of, persons; or (ii) damage to, or destruction of, objects.”<sup>48</sup> The HPCR, therefore, highlights that a weapon and “means of warfare” refer to the same thing.

W.H. Boothby, an expert in weapons law, has pointed out that the term “weapon” means the same thing as “means of warfare” but is, however, different from “methods of warfare.” His definition of “means of warfare” is that they are “all weapons, weapons platforms [and] associated equipment *used* directly to deliver force during hostilities” while “methods of warfare” is “the way in which weapons are used in hostilities.”<sup>49</sup> Thus, means of warfare refers to weapons like munitions, implements, projectiles, objects, pieces of equipment etc. while methods of warfare refer to *how* such weapons are used in warfare.<sup>50</sup> This formulation is supported by the HPCR referred to above, which also gives the definition of “means of warfare” to refer to “weapons and weapons systems or platforms employed for purposes of attack”<sup>51</sup> while “methods of warfare consists of the various general categories of operations, such as bombings, as well as the specific tactics used for attack, such as high altitude bombing.”<sup>52</sup>

Likewise, the ICRC Commentary on the Additional Protocols notes that the “term ‘means of combat’ or ‘means of warfare’ generally refers to the weapons being *used*, while the expression ‘methods of combat’ generally refers to the way in which such weapons are used.”<sup>53</sup> The International Institute of Humanitarian Law has also made the distinction noting that “means or methods” is a term of art in the law of armed conflict. Means of combat are the instruments used in the course of hostilities, specifically weapons. By contrast, methods of combat are the techniques or tactics for conducting hostilities’.<sup>54</sup>

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<sup>47</sup> H.W. BOOTHBY, WEAPONS AND THE LAW OF ARMED CONFLICT 4 (2009).

<sup>48</sup> HUMANITARIAN POL’Y & CONFLICT RES. (HPCR), MANUAL ON INTERNATIONAL LAW APPLICABLE TO AIR AND MISSILE WARFARE 6 (2009).

<sup>49</sup> BOOTHBY, *supra* note 47, at 4.

<sup>50</sup> *Id.*

<sup>51</sup> HPCR, *supra* note 48, at 4.

<sup>52</sup> *Id.* at 5.

<sup>53</sup> ICRC, *supra* note 11, at ¶ 1957.

<sup>54</sup> M.N. SCHMITT ET AL., THE MANUAL ON THE LAW OF NON-INTERNATIONAL ARMED CONFLICT 12 (2006), available at <http://www.iihl.org/wp-content/uploads/2015/12/Manual-on-the-Law-of-NIAC.pdf>. There is a question as to whether there exists an obligation to

Most of the definitions that are given by states and commentators do not adequately define the term “weapon” because they repeat the term “weapon” in their definitions. However, these definitions provide three important entry points. First, the definitions point to one of the critical components of a weapon – the capability to directly cause harm or to defend. Second, the constant use of the verbs “used,” “employed” and “applied” in the definitions of a weapon implies that a weapon is the ‘object’ that is used by an agent who is the ‘subject’ in those definitions. Third, the existing definitions both from states and some commentators also categorically state that weapon systems are ‘weapons’ themselves.

However, the third observation has been contested by other commentators and rightly so.<sup>55</sup> Strictly speaking, weapon systems are not weapons but rather delivery platforms of weapons. From time immemorial, weapons have been delivered by humans. To a limited extent, it is agreeable and understandable why certain weapon systems may constitute a weapon itself. This is where, like the ICRC points out, the weapon system has a “direct injury or damaging effect on people or property.”<sup>56</sup>

Nevertheless, I observe that stakes are different and should be considered differently, in the case of autonomous weapon systems. Autonomy in weapon systems “exists on a continuum.”<sup>57</sup> The more the systems increasingly gain autonomy on the spectrum towards the point of being fully autonomous, with the capability to execute the “critical functions” without human intervention – for example being able to search, track, select, target and decide when to kill or target – the more the questions arise as to whether or not such systems should still be categorized as a “weapon” for the purposes of legal review under Article 36.

The fact that an object is capable of causing harm or has an offensive capability does not automatically make it a “weapon” that is subject to Article 36 review. Human soldiers, for example, are capable of causing harm – they are in fact considered the military’s oldest “weapon” – yet they are not subject to the Article 36 review.

Weapon systems with an increased form of autonomy or those that are fully autonomous are not the first kind of an “offensive or defensive capability” to raise the question whether they fully fall within the parameters of Article 36. Space and cyberspace capabilities, for example, have raised questions as to whether they can be considered as “weapons and means of

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review ‘methods of warfare.’ See M.N. SCHMITT, TALLINN MANUAL ON THE INTERNATIONAL LAW APPLICABLE TO CYBER WARFARE (2013).

<sup>55</sup> See D.A. Lewis, WAR-ALGORITHM ACCOUNTABILITY 15-49 (2016).

<sup>56</sup> ICRC, *supra* note 13, at 937 n. 17.

<sup>57</sup> U.C. JHA, KILLER ROBOTS: LETHAL AUTONOMOUS WEAPON SYSTEMS LEGAL, ETHICAL AND MORAL CHALLENGES 8 (2016).

warfare” for the purposes of Article 36.<sup>58</sup>

When conducting the legal review, Justin McClelland points to the importance of understanding the concept of a weapon. A reviewing state must first and foremost “assess what the ‘capability gap’ is that they wish to fill, i.e. what [is] it that the military wants to do that its current equipment does not allow it to do.”<sup>59</sup> Precisely in relation to unmanned systems, he notes as follows:

The digitization of the battle space will further enhance the networked capability that such technology allows for. In deciding upon the application of Article 36 it is necessary to understand how the communications systems actually work. This involves not just an understanding of the science but of the military use of that science. Only then will it be possible to establish whether the system possesses an offensive capability and, if so, the manner in which it is intended to be used. Will the system, for instance, be used to analyze target data and then provide a target solution or profile? If so, the role of the system would reasonably fall within the meaning of ‘means or method of warfare’ as it would be providing an integral part of the targeting decision process. However, if it simply collates data in such a way as to configure a graphic representation of the locations of military formations without altering the nature or content of the data, or if it simply passes the data from one location to another, then it would not be considered as falling within the scope of ‘means or methods of warfare’.<sup>60</sup>

What is important from McClelland’s observation is the significance of understanding the capability of a system before categorizing it as falling within the scope of Article 36. There is no doubt that autonomous weapon systems provide an “offensive capability.” The question, however, goes further; if there is increased or full autonomy in providing that “offensive capability,” does the system still remain a weapon subject to Article 36? The quote above from McClelland also points to a scenario where there is a human involvement or a human in or on the loop in the making of the decision on who to target as the system’s main function is to “analyse target data and then provide a target solution or profile” for example. This is a different situation to weapons with increased autonomy or those that are fully autonomous.

As already pointed out, in all the definitions of weapons given above, there is either an express or implied, direct or meaningful involvement of

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<sup>58</sup> Blake & Imburgia, *supra* note 4, at 161.

<sup>59</sup> McClelland, *supra* note 46, at 401.

<sup>60</sup> *Id.* at 401-406.

humans in the real-time operation of the “capability.” For the purposes of categorizing a capability as a weapon, I, therefore, argue that unless there is “meaningful human control” of the “capability,” the “capability” ceases to be a weapon or means of warfare, at least for the purposes of Article 36. The consequential question that comes to the reader’s mind is what then becomes of a “capability” that has no “meaningful human control” – where there is increased or full autonomy in the “critical functions” of making the decision as to who dies and who lives? Below, I argue that such a “capability” is more of a *robot-combatant*.

Patrick Lin has considered one of the interesting questions as far as a legal review of new weapons is concerned. He has posed the question whether “enhancement technologies, which typically do not directly interact with anyone other than the human subject, be nevertheless subject to a weapons legal review? That is, is there a sense in which enhancements could be considered as ‘weapons’ and therefore under the authority of certain laws?”<sup>61</sup>

Lin’s question comes in the light of some of the US military projects which are at various stages of development that are geared towards human enhancements. Such technologies, for example, would use the knowledge in “biology, neuroscience, computing, robotics, and materials to hack the human body, reshaping it in our own image.”<sup>62</sup> The question he considers is at what point does the human cease to be human due to the enhancement and become subject to Article 36 assessment?<sup>63</sup> In this paper, I am asking the reverse of the question; with the ever increasing autonomy in weapon systems especially in the “critical functions,” at what point does the machine or robot cease to be a “weapon” and transform into a “robo-combatant” that should *not* be subject to Article 36 assessment but to other rules of international law?

Lin notes that from the beginning, it should be understood that “the war-fighter is undeniably a weapon or instrument of war,” “perhaps a military’s best and oldest weapon.”<sup>64</sup> Yet, human soldiers are not subject to Article 36 review of new weapons for the obvious reasons. Lin considers, however, that where one’s body parts are replaced with robotic parts, “the organism becomes less human and more robotic. . . [that] if we want to say that robots are weapons [subject to Article 36 review] but humans are not

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<sup>61</sup> P. Lin, *Could human enhancement turn soldiers into weapons that violate international law? Yes*, THE ATLANTIC, Jan. 4 2013, <http://www.theatlantic.com/technology/archive/2013/01/could-human-enhancement-turn-soldiers-into-weapons-that-violate-international-law-yes/266732/> (last visited Apr. 29, 2014).

<sup>62</sup> *Id.*

<sup>63</sup> *Id.*

<sup>64</sup> *Id.*

[therefore not subject to article 36 review], then we would be challenged to identify the point on that spectrum at which a human becomes a robot or a weapon.”<sup>65</sup>

Lin clearly points out that at a certain point of the spectrum, an enhanced human warfighter may become a weapon that should be subject to Article 36 review. I align myself with that observation. He articulates the spectrum as follows:

On one end of the spectrum would stand a normal, unenhanced human. One step toward the path of being fully enhanced may be a warfighter who drinks coffee or pops amphetamines (‘go pills’ in military-speak) as a cognitive stimulant or enhancer. Another step may be taking drugs that increase strength, erase fear, or eliminate the need for sleep. At the far, more radical end may be a warfighter so enhanced that s/he no longer resembles a human being, such as a creature with four muscular arms, fangs, fur, and other animal-like features.<sup>66</sup>

This same spectrum exists for autonomous weapon systems. The more a robot’s autonomy increases, the more it gains human-like qualities. I therefore, argue that the more a robot performs “critical functions” that have been the preserve of human combatant – like making the decision as to who to kill, the more the robot is more of a combatant than a weapon.

Human soldiers have been termed the oldest military “weapon” but their “legal review” is not in Article 36. The “legal review” of human soldiers lies in the international humanitarian laws and norms of who can be a combatant, which include laws such as the legal age for conscription into the army and aspects of mental capacity.<sup>67</sup> Belligerents are, for example, proscribed from conscripting children into the army.<sup>68</sup> Similarly, people with a mental impairment may not be conscripted as soldiers. The rationale for the prohibition of conscription of these two categories of persons is twofold: first, it is to protect the human rights of the child or the mentally impaired person since they cannot give a valid consent to the conscription.<sup>69</sup> Second, it is to protect the remedial rights of those against whom force may be used.<sup>70</sup> Where one’s rights are violated, holding accountable of those responsible – for example through prosecution – is part of victims’

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<sup>65</sup> *Id.*

<sup>66</sup> *Id.*

<sup>67</sup> See E. DUPUY & K. PETERS, WAR AND CHILDREN: A REFERENCE HANDBOOK 65 (2010).

<sup>68</sup> *Id.*

<sup>69</sup> *Id.*

<sup>70</sup> D. SHELTON, REMEDIES IN INTERNATIONAL HUMAN RIGHTS LAW 84 (2015).

remedies.<sup>71</sup> Weapon systems with increased autonomy or those that are fully autonomous – without proper human control – pose serious challenges to this second consideration.<sup>72</sup>

Therefore, understanding what a weapon is and distinguishing it from a combatant or fighter in terms of functions they are allowed to perform in international law is fundamental for the correct application of rules of international humanitarian law. In the debate on whether autonomous weapon systems can comply with international law as provided for in Article 36, arguments have generated into whether AWS can perform better than humans when it comes to IHL rules of distinction and proportionality. I argue that in as much as that consideration is relevant, it may be that an important initial hurdle regarding AWS has been jumped. On the one hand, there is a push to consider AWS as weapons yet on the other – when it comes to the assessment of their legality – rules that are supposed to govern combatants – who, from time immemorial have been human beings – are invoked without proper deliberation of the implications thereof. Such an approach is tantamount to attempting to have the cake and eat it at the same time.

I propose that both states and the international community must carefully consider whether AWS are entering the battlefield as weapons or as combatants. As I have already pointed out above, the definition of a weapon as provided for by states and commentators has an implied requirement within it – the requirement that the weapon is used and meaningfully controlled by a human. A weapon has never been allowed to perform the critical combatant function of making the decision on who to kill, on making proportionality calculations and other human considerations before such a kill. The non-governmental organization, Article 36, has observed as follows:

The linking of ‘Meaningful Human Control’ to individual attacks is significant because it is in relation to individual attacks that existing rules of international humanitarian law apply – *it is over individual attacks that commanders must make legal judgements. . . States should be very wary of adopting a line of thinking that sees weapons as making legal judgements. . . it must be clearly acknowledged that the responsibility for legal judgements remains with the person or person(s) who plan or decide upon an attack.*<sup>73</sup> (Emphasis added)

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<sup>71</sup> *Id.*

<sup>72</sup> See *Mind the Gap: The Lack of Accountability for Killer Robots*, HUMAN RIGHTS WATCH, (Apr. 9, 2015), <https://www.hrw.org/report/2015/04/09/mind-gap/lack-accountability-killer-robots>.

<sup>73</sup> *Key Areas for Debate on Autonomous Weapon Systems*, ARTICLE 36 4 (2014),

I argue that there can never be meaningful or proper human control of the use of force where the decision to use lethal force is made by a machine with no human being giving consideration in real time. Thus, for a weapon system to remain a weapon that is reviewable under Article 36, it should be under direct, meaningful human involvement and effective control.

Therefore, my proposition is that if a capability does not squarely fall within the acceptable definition or description of a weapon, then it should not be assessed under Article 36 on the review of new weapons.<sup>74</sup> In the debate on AWS, it has been pointed out that AWS are not indiscriminate in nature and will not cause superfluous harm. Assuming without agreeing that this is true, I argue that the fact that AWS may meet the Article 36 standard of discrimination and not cause superfluous harm would not matter if they should not be assessed under that regime in the first place – that is – if AWS go beyond the traditional designs and notions of what constitutes a weapon.

Conventionally, assessments of the legality of a weapon start and end with whether the weapon can be used by a human combatant in a discriminate manner and not cause unnecessary suffering. The moment one starts asking whether the supposedly “new weapon” can distinguish and make proportionality calculations, rules that traditionally have been consistently applied to human combatants, then what is at stake might as well be falling outside the pure scope of a weapon.

It should be noted that a weapon can satisfy the Article 36 standard but can still be used unlawfully by the weapon bearer – that is – indiscriminately, disproportionately or both. This is where the customary IHL rules of distinction and proportionality have been formulated, developed and hardened to regulate the conduct of combatants or fighters.

On the one hand, there are two basic rules of international weapons law: the rule on the prohibition of weapons that are indiscriminate in nature and the rule on the prohibition of weapons that cause unnecessary, superfluous harm. On the other hand, there are five basic principles of international humanitarian law applicable to combatants: rules of humanity, distinction, proportionality, military necessity and precaution. While the international weapons law rules are geared towards the regulation of the weapon itself, the IHL rules regulate combatants or fighters’ behavior and how they use such weapons. Thus, in as much as there is a link between the two sets of rules, they are not the same.

The international humanitarian law rules of targeting such as distinction and proportionality – rules that are applicable to human combatants – may not be transposed and be applied to robots without an ultimate mutiny to the

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available at <http://www.article36.org/wp-content/uploads/2014/05/A36-CCW-May-2014.pdf> (last visited Aug. 1, 2014).

<sup>74</sup> Geneva Protocol, Article 36.

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laws of war. I, therefore, argue that to invoke and apply the rules of distinction and proportionality to autonomous weapon systems is otherwise to elevate and accept them as combatants or fighters – which may be a dangerous leap. The first question, therefore, should be: can machines or robots be “combatants” under international law and does the international community want *robo-combatants*?

Under international law, the answer to the above question is in the negative. International law requires any use of force to be by a human of sound mind and legal age, capable of taking responsibility for their actions.<sup>75</sup> The fact that someone can fight – even if in compliance with the law – does not necessarily make them legitimate and lawful fighters. Child soldiers, for example, can be able to comply with the laws of war but their conscription into armies and participation in armed conflict is prohibited.<sup>76</sup> Likewise, rebels in non-international armed conflict can be able to fight in accordance with the laws of war yet the international community still agrees that states retain the right to prosecute them as criminals for mere participation in that armed conflict.

If weapons with increased autonomy or those that are fully autonomous do not fulfill the criteria of who can be a combatant, then rules applicable to combatants or fighters may not be invoked in justifying their acceptance or otherwise. The idea, I argue, must neither be to fit in AWS within the framework of weapons at all cost nor to accept them as combatants through the back door. For that reason, there is justification as to why the Campaign to Stop Killer Robots<sup>77</sup> refer to the technology as “Killer Robots” where robots assume the “critical functions” of deciding whom to kill – functions that have been reserved for human combatants.

As stated above, pronouncements have been made that AWS are not indiscriminate in nature and will not cause any superfluous harm.<sup>78</sup> There is, however, no detailed consideration of what exactly the international weapons law rules on the prohibition of weapons that are indiscriminate in nature, what those that cause superfluous harm entail, and how AWS measure up to those rules. I next consider these rules with an intention to the distinguish weapons law rules and international humanitarian law targeting rules.

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<sup>75</sup> See Dupuy & Peters, *supra* note 67, at 65.

<sup>76</sup> *Id.*

<sup>77</sup> The Campaign to Stop Killer Robots is an international coalition working to preemptively ban fully autonomous weapons. See CAMPAIGN TO STOP KILLER ROBOTS, <http://www.stopkillerrobots.org/>.

<sup>78</sup> M.N. Schmitt, *Autonomous Weapon Systems and International Humanitarian Law: A Reply to the Critics*, HARV. NAT'L SECURITY J. FEATURE 9 (2013); M.N. Schmitt & J.S. Thurnher, *Out of the Loop: Autonomous Weapon Systems and the Law of Armed Conflict*, 4 HARV. NAT'L SECURITY J. 231, 245 (2013).

B. *AWS and the basic principles of international weapons law*

International humanitarian law seeks to protect those who are not directly taking part in hostilities by limiting the means and methods of warfare. For centuries, limitations on the means and methods of warfare – for example the ones that were provided in the codes of chivalry – have existed.<sup>79</sup> Weapons have been banned because they were contrary to the basic principles of international weapons law. The last 150 years have seen the adoption of a number of treaties on weapons, banning or restricting the use of certain weapons in armed conflict.<sup>80</sup>

In terms of Article 35(1) of Additional Protocol I to the Geneva Conventions, “in any armed conflict, the right of parties to the conflict to choose methods or means of warfare is not unlimited.” Article 35 is not only the “basic tenet of international humanitarian law”<sup>81</sup> but contains the norms in international weapons law. Three basic principles of international weapons law come forth: the prohibition of weapons that cause superfluous harm and suffering, the prohibition of weapons that cause damage to the environment, and the prohibition of weapons that are indiscriminate in nature. In this paper, I will only consider the rules that are relevant to autonomous weapon systems: the rules on the prohibition of weapons that cause superfluous harm, unnecessary suffering and weapons that are indiscriminate in nature.<sup>82</sup>

It is difficult to apply these rules of international weapons law to AWS because as noted above, these systems are not a weapon in themselves but weapon delivery systems. Scholars like M.N. Schmitt thus observe the following:

Autonomous weapon systems are not unlawful *per se*. Their autonomy has no direct bearing on the probability they would cause unnecessary suffering or superfluous injury, does not preclude them from being directed at combatants and military objectives, and need not result in their having effects that an

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<sup>79</sup> See T. Gill, *Chivalry: A Principle of the Law of Armed Conflict?*, in ARMED CONFLICT AND INTERNATIONAL LAW: IN SEARCH OF THE HUMAN FACE 33-51 (M. Matthee et al. eds., 2013), available at [http://www.springer.com/cda/content/document/cda\\_downloadaddocument/9789067049177-c2.pdf?SGWID=0-0-45-1404805-p175067508](http://www.springer.com/cda/content/document/cda_downloadaddocument/9789067049177-c2.pdf?SGWID=0-0-45-1404805-p175067508).

<sup>80</sup> See *Review of New Weapons*, INT’L COMM. OF THE RED CROSS (Nov. 30, 2011), <http://www.icrc.org/eng/war-and-law/weapons/new-weapons/overview-review-of-new-weapons.htm> (last visited July 1, 2014).

<sup>81</sup> ICRC, *supra* note 13, at 931.

<sup>82</sup> ICRC, CUSTOMARY INT’L HUMANITARIAN LAW DATABASE (CUSTOMARY IHL DATABASE) Rule 70 (2005), available at [https://ihl-databases.icrc.org/customary-ihl/eng/docs/v1\\_rul\\_rule70](https://ihl-databases.icrc.org/customary-ihl/eng/docs/v1_rul_rule70).

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attacker cannot control.<sup>83</sup>

His argument is that the rule on the proscription of weapons that cause unnecessary suffering is meant to address “a weapon system’s effect on the targeted individual, not the manner of engagement (autonomous).”<sup>84</sup> Schmitt, however, agrees that the combination of a weapon systems platform with an unlawful weapon can “render the autonomous weapon system unlawful *per se*.”<sup>85</sup> He nevertheless concludes that such a “possibility is not a valid basis for imposing an across-the-board pre-emptive ban on the systems.”<sup>86</sup> Thus, to Schmitt, the aspect of autonomy alone has no bearing on the lawfulness of the system. In as much as Schmitt’s argument may hold water, he seems to unnecessarily separate the lethality of the system from autonomy – something which somewhat obfuscates the problem at hand.

It is agreeable that autonomous weapon systems are platforms that can carry all kinds of weapons, from stones, bombs, grenades, missiles to nuclear weapons.<sup>87</sup> As weapon systems, they can carry legal and illegal weapons. It is possible that if these weapon systems fall into the wrong hands, there is a huge likelihood that they may be caused to deliver illegal weapons.<sup>88</sup>

However, for the purposes of this paper, I will proceed from an optimistic supposition that these weapon systems will be caused to deliver legal weapons. The issue that I probe in this section is whether these weapon systems, by virtue of their increased autonomy or full autonomy, can be unlawful weapons *per se*. In other words, can weapon systems with increased autonomy or full autonomy, albeit carrying legal weapons on board, cause superfluous harm or be indiscriminate by virtue of that autonomy? The rule on the prohibition of weapons that cause superfluous harm is, after all, applicable to “lawful means that have been altered in order to exacerbate suffering or injury.”<sup>89</sup> The increase in autonomy may not necessarily be to exacerbate suffering but it may have a potential to alter lawful means into unlawful.

In that regard, the weapon systems and the weapons that they are carrying are viewed as a “complex whole,” a set of “related hardware units or programs or both” “working together as parts of a mechanism” geared towards a single goal.<sup>90</sup> If the answer is in the positive, then autonomous

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<sup>83</sup> Schmitt, *supra note* 78, at 35.

<sup>84</sup> *Id.* at 9.

<sup>85</sup> *Id.*

<sup>86</sup> *Id.*

<sup>87</sup> *Id.*

<sup>88</sup> *Id.*

<sup>89</sup> *Id.* at 144.

<sup>90</sup> See <http://www.oxforddictionaries.com/definition/english/system> (last visited July 22,

weapon systems with increased autonomy or those that are fully autonomous may not comply with the basic principles of international weapons law.

1. Prohibition of weapons that cause superfluous harm and unnecessary suffering

Article 35 (2) of Additional Protocol I and Article 23(e) of the Hague Regulations provides for the rule on the prohibition of using weapons that cause superfluous harm and unnecessary suffering. As mentioned above, this rule is different from the targeting rule of proportionality as applicable to combatants. The international weapons law rule on the prohibition of weapons that cause superfluous suffering applies to legitimate targets and is inapplicable to persons who, *ab initio*, are immune from attack.<sup>91</sup> Any incidental harm to protected persons is “governed by the rule of proportionality and the requirement to take precautions in attack.”<sup>92</sup> Thus, “superfluous injury and unnecessary suffering are not to be equated with the notion of incidental injury to civilians” but rather “refers to a situation in which a weapon aggravates suffering [to targeted individuals] without providing any further military advantage to [the] attacker.”<sup>93</sup>

When assessing whether a weapon under review complies with the rule, only the normal use of the weapon or means should be considered since the “purpose is to judge its lawfulness *per se*.”<sup>94</sup> Weapons that cause superfluous injury or unnecessary suffering are prohibited. Throughout history, belligerents have shunned weapons that cause unnecessary suffering. Thus, for example, it was prohibited to use spears with a barbed head,<sup>95</sup> serrated-edged bayonets,<sup>96</sup> poison, and poisoned weapons.<sup>97</sup>

As early as 1868, treaties were adopted prohibiting the use of exploding projectiles which weigh less than 400 grams<sup>98</sup> and bullets that flatten upon

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2014).

<sup>91</sup> M.N. SCHMITT ET AL., TALLINN MANUAL ON INTERNATIONAL LAW APPLICABLE TO CYBER WARFARE 143 (2013).

<sup>92</sup> *Id.*

<sup>93</sup> *Id.*; See also Nuclear Weapons Case, ¶ 78.

<sup>94</sup> SCHMITT ET AL., *supra* note 91, at 144.

<sup>95</sup> See e.g., ICRC, CUSTOMARY IHL DATABASE Rule 70 (2005) (referencing the military manuals of New Zealand ¶ 73; South Africa ¶ 80; United Kingdom ¶ 85; United States ¶ 87), available at [https://ihl-databases.icrc.org/customary-ihl/eng/docs/v1\\_cha\\_chapter20\\_rule70?OpenDocument&highlight=civilians](https://ihl-databases.icrc.org/customary-ihl/eng/docs/v1_cha_chapter20_rule70?OpenDocument&highlight=civilians).

<sup>96</sup> See *id.* (referencing the military manuals of the Netherlands ¶¶ 71–72), available at [https://ihl-databases.icrc.org/customary-ihl/eng/docs/v1\\_cha\\_chapter20\\_rule70?OpenDocument&highlight=civilians](https://ihl-databases.icrc.org/customary-ihl/eng/docs/v1_cha_chapter20_rule70?OpenDocument&highlight=civilians).

<sup>97</sup> See ICRC, *supra* note 13.

<sup>98</sup> See ICRC, *supra* note 10.

entering the human body.<sup>99</sup> Using poisonous gas in war was banned in 1925 as it was considered to cause unnecessary suffering to the enemy.<sup>100</sup> A number of treaties have been adopted to regulate a number of conventional weapons, especially those deemed to cause unnecessary suffering.<sup>101</sup>

After witnessing the effects of chemical and biological weapons in the First World War, the international community outlawed them and subsequently prohibited the development, production, stockpiling and transfer of these weapons. States did not only agree that personnel land mines are non-discriminative in nature but that their use largely leads to permanent disability which is unnecessary. Thus, in 1997, governments adopted the Convention on the Prohibition of Anti-Personnel Mines.<sup>102</sup>

On account of unnecessary suffering caused by cluster munitions, these weapons were banned in 2008 through the Convention on Cluster Munitions which prohibits “the use, production, stockpiling and transfer of cluster munitions.”<sup>103</sup> The ICRC continues to urge states to move forward with an aim of banning chemical weapons.<sup>104</sup>

To ascertain whether AWS with increased autonomy or those that are fully autonomous are contrary to the rule on the prohibition and use of weapons of a nature that cause superfluous injury or unnecessary suffering, it is important to understand what that rule entails. Before considering what the rule entails, it is equally important to outline the status of this rule in international law.

#### *a. Customary International Law*

The prohibition of weapons that cause unnecessary suffering is a customary international law rule that applies both in international armed

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<sup>99</sup> Hague Declaration Concerning Expanding Bullets (1899).

<sup>100</sup> See Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or other Gases, and of Bacteriological Methods of Warfare, Geneva, 17 June 1925.

<sup>101</sup> *E.g.*, Poison and Poisoned Weapons, Hague Regulations, Rule 72, Art. 23(a), (1907); Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction, OPCW, 13 Jan. 1993; Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction, BWC, 10 April, 1972; Protocol on Prohibitions or Restrictions on the Use of Mines, Booby-Traps and Other Devices as amended on 3 May 1996 (Amended Protocol II); Protocol on Explosive Remnants of War (Protocol V to the 1980 CCW Convention), Geneva, 28 November 2003; Protocol on Prohibitions or Restrictions on the Use of Incendiary Weapons (Protocol III), Geneva, 10 October 1980.

<sup>102</sup> Convention on the Prohibition of Anti-Personnel Mines and on their Destruction (Ottawa Treaty), 3 December 1997.

<sup>103</sup> Convention on Cluster Munitions, UNODA, 30 May 2008.

<sup>104</sup> See ICRC, *Use of Weapons*, (Dec. 16, 2016), <http://www.icrc.org/eng/war-and-law/weapons/>

conflict (“IAC”) and non-international armed conflict (“NIAC”).<sup>105</sup> Thus, even if a state is not a party to Additional Protocol I, it is bound by customary international law not to develop or deploy weapons that cause superfluous or unnecessary suffering. I argue, therefore, that if the nature of the weapon system – its autonomy in “critical functions” for example – would cause otherwise lawful weapons to cause unnecessary suffering or superfluous harm, then that particular weapons system violates one of the important rules of international weapons law.

*b. Treaty Law*

There are various treaties that provide for the prohibition of weapons that cause unnecessary suffering or superfluous harm. In some of the treaties, this rule was the basis for the banning of the particular weapon. Examples of treaties that either set forth this rule or were motivated by it are the St. Petersburg Declaration, the Geneva Gas Protocol, Additional Protocol I, II, and Amended Protocol II to the Convention on Certain Conventional Weapons, the Ottawa Convention banning anti-personnel mines, and the Rome Statute.<sup>106</sup> When adopting Amended Protocol II to the Convention on Certain Conventional Weapons, states indicated that this rule is applicable to NIAC.<sup>107</sup> There are also other instruments that contain this rule<sup>108</sup> and it has been referred to in many international conferences.<sup>109</sup>

*c. State Practice*

There is consistent state practice that supports the existence of the rule

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<sup>105</sup> See ICRC, 1 CUSTOMARY INT’L HUMANITARIAN LAW Rule 70 (2005), available at [https://ihl-databases.icrc.org/customary-ihl/eng/docs/v1\\_rul\\_rule70](https://ihl-databases.icrc.org/customary-ihl/eng/docs/v1_rul_rule70).

<sup>106</sup> Declaration Renouncing the Use, in Time of War, of Explosive Projectiles Under 400 Grammes Weight. Saint Petersburg, 11 December 1868; Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or other Gases, and of Bacteriological Methods of Warfare, Geneva, 17 June 1925; Protocol on Prohibitions or Restrictions on the Use of Mines, Booby-Traps and Other Devices as amended on 3 May 1996 (Amended Protocol II); Convention on the Prohibition of Anti-Personnel Mines and on their Destruction (Ottawa Treaty), 3 December 1997; UN General Assembly, *Rome Statute of the International Criminal Court* (last amended 2010), 17 July 1998; see also ICRC, *supra* note 13, at 16.

<sup>107</sup> See ICRC, *supra* note 13.

<sup>108</sup> See Oxford Manual of Naval War, Article 16(2) ¶ 21; ICTY Statute, Article 3(a) ¶ 27; San Remo Manual, ¶ 42(a); UN Secretary-General’s Bulletin, Section 6.4 ¶ 30; UNTAET Regulation No. 2000/15, Section 6(1)(b)(xx) ¶ 31; see also G.A. Res. 3076 (XXVIII) (Dec. 6, 1973), G.A. Res. 3102 (XXVIII) (Dec. 12, 1973), G.A. Res. 3255 (XXIX) (Dec. 9, 1974), G.A. Res. 31/64 (Dec. 10, 1976), G.A. Res. 32/152 (Dec. 19, 1977), G.A. Res. 33/70 (Dec. 14, 1978), G.A. Res. 34/82 (Dec. 11, 1979), G.A. Res. 35/153 (Dec. 12, 1980), G.A. Res. 36/93 (Dec. 9, 1981).

<sup>109</sup> See for example the 22nd International Conference of the Red Cross; 26th International Conference of the Red Cross and Red Crescent.

against the use of weapons that cause superfluous harm and unnecessary suffering. The rule is contained in many states' military manuals<sup>110</sup> and its violation constitutes a criminal offense.<sup>111</sup> State practice also clearly shows that this rule is applicable in both IAC and NIAC.<sup>112</sup> The prohibition of certain kinds of weapons or means of warfare is no longer dependent on which type of armed conflict or against whom they are employed. As highlighted above, "...what is inhumane, and consequently proscribed, in international wars, cannot but be inhumane and inadmissible in civil strife."<sup>113</sup>

*d. Case Law*

The rule against using weapons that cause unnecessary suffering has been relied upon in case law.<sup>114</sup> For example, in the Nuclear Weapons case, the judges observed that this rule is part of the "cardinal principles" of IHL.<sup>115</sup> Numerous parties to this case also heavily relied on the rule.

2. Defining "superfluous injury or unnecessary suffering"

Notwithstanding the broad consensus on the existence of the rule, there are different views on how to determine whether a particular weapon causes unnecessary suffering.<sup>116</sup> This is particularly important in relation to AWS whose use and performance is highly unpredictable.<sup>117</sup> From the beginning, it should be understood that the rule on the prohibition of weapons that cause superfluous injury or unnecessary suffering concerns itself with how a weapon is designed, especially where the weapon is redesigned specifically to enhance the pain it inflicts when targeting.<sup>118</sup>

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<sup>110</sup> See ICRC, *supra* note 13 (referencing the military manuals of Netherlands, New Zealand, Nigeria, Romania, Russian Federation, Senegal, South Africa, Spain, Sweden, Switzerland, Togo, United Kingdom, United States); *see also* ICRC, CUSTOMARY IHL: MILITARY MANUALS, available at [https://ihl-databases.icrc.org/customary-ihl/eng/docs/src\\_iimima](https://ihl-databases.icrc.org/customary-ihl/eng/docs/src_iimima).

<sup>111</sup> *Id.*

<sup>112</sup> See ICRC, CUSTOMARY IHL DATABASE Rule 70 (2005), available at [https://ihl-databases.icrc.org/customary-ihl/eng/docs/v1\\_rul\\_rule70](https://ihl-databases.icrc.org/customary-ihl/eng/docs/v1_rul_rule70) (last visited July 1, 2014).

<sup>113</sup> *Prosecutor v Tadic*, Case No. IT-94-1-I, at ¶ 119.

<sup>114</sup> *Ryuichi Shimoda et al. v. The State*, 8 Japan Ann. of Int'l Law 212 (1964); Cámara Nacional de Casación Penal [C.N.C.P.] [National Court of Appeal on Criminal Matters], 9/12/1985, "Sentencia y fallo," Fallos (1985-D-9) (Arg.).

<sup>115</sup> Nuclear Weapons case, *supra* note 22, at ¶ 78.

<sup>116</sup> R.M. Coupland, *Towards a Determination of Which Weapons Cause "Superfluous Injury or Unnecessary Suffering"*, in THE SIRUS PROJECT 7 (1997).

<sup>117</sup> Christof Heyns (Special Rapporteur on Extrajudicial, Summary or Arbitrary Executions), ¶ 42 U.N. Doc. A/HRC/23/47 (Apr. 3, 2013).

<sup>118</sup> SCHMITT ET AL., *supra* note 54, at 12.

Without a doubt, injury and suffering of both fighters and civilians are components that characterize war.<sup>119</sup> It is also conceivable that all instruments of war cause suffering yet injury and suffering caused must not be needless and superfluous for such is illegitimate.<sup>120</sup> The superfluity of suffering is however not present simply because a belligerent has caused “a great deal of suffering on enemy troops.”<sup>121</sup> To be unlawful, the suffering caused must have no military purpose at all.<sup>122</sup> There are elements that have been articulated to point to whether a weapon is in the category of those that are prohibited. The following are some of the major ones.

*a. Disproportionate suffering*

In principle, there is agreement that any suffering that does not serve any military purpose violates the rule on the prohibition of employing means and methods of warfare that cause unnecessary suffering or superfluous harm.

The rule requires the striking of a balance between the anticipated military gains as measured against the harm caused. The rule is deemed to be violated where there is disproportionate injury or suffering to the military advantage sought.<sup>123</sup> Thus, the definition of unnecessary suffering was given in the Nuclear Weapons case as that “harm [which is] greater than that unavoidable to achieve legitimate military objectives.”<sup>124</sup> However, as mentioned above, the “suffering” referred to in this instance refers to the targeted individuals, not the incidental harm to protected persons like civilians.

The suggestion from other research on this issue is that what determines superfluous injury and unnecessary suffering is “design-dependent.”<sup>125</sup> In other words, the focus must be on the weapon itself *per se*. When

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<sup>119</sup> B.M. Carnahan, *Unnecessary Suffering, the Red Cross and Tactical Laser Weapons*, 18 LOY. INT'L & COMP. LAW REV. 705, 713 (1996).

<sup>120</sup> See M.S. MCDUGAL & F.P. FELICIANO, LAW AND MINIMUM WORLD PUBLIC ORDER 616 (1961) (quoting a distinguished US commentator).

<sup>121</sup> Carnahan, *supra* note 119, at 713; see also C. Greenwood, *Battlefield Laser Weapons in the Context of the Law on Conventional Weapons*, in BLINDING WEAPONS, REPORTS OF THE MEETINGS OF EXPERTS CONVENED BY THE INTERNATIONAL COMMITTEE OF THE RED CROSS ON BATTLEFIELD LASER WEAPONS 1989-1991 71 (D.B. Louise ed., 1993).

<sup>122</sup> MCDUGAL & FELICIANO, *supra* note 120, at 616.

<sup>123</sup> See e.g., CUSTOMARY IHL: MILITARY MANUALS (citing the military manuals of Germany ¶ 58, New Zealand ¶ 73, United States ¶¶ 88–89, 93, & Yugoslavia ¶ 94), available at [https://ihl-databases.icrc.org/customary-ihl/eng/docs/src\\_iimima](https://ihl-databases.icrc.org/customary-ihl/eng/docs/src_iimima).

<sup>124</sup> Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion, 1996 I.C.J. Rep 78 (July 8), available at <http://www.icj-cij.org/docket/files/95/7495.pdf>.

<sup>125</sup> Coupland, *supra* note 116, at 8.

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interpreting this approach in the face of AWS, one needs to be careful. First, it cannot be ignored that both the superfluity and indiscriminateness of a weapon may largely be as a result of user-dependent factors.<sup>126</sup> In this case, the user is the autonomous system. The level of autonomy, therefore, becomes an important factor when discussing the lawfulness of the system.

The point I am stressing here is that traditionally, many weapons have been accepted as in compliance with the rule on the prohibition of weapons that cause superfluous harm largely because of the contribution of rules that govern the user of that particular weapon. The point is, in as much as the rule may focus on the design of the weapon, it cannot be denied that a weapon that is lawful may be used to cause disproportionate, superfluous suffering to the combatant targeted. An example would be of a combatant who uses an ordinary sniper rifle to blow an enemy combatant arm by arm, leg by leg, and leave him to bleed to death or sustain permanent disability. In any event, a human combatant would not continue firing at the enemy combatant if it is apparent that the enemy combatant is incapacitated by virtue of wounds. It has also been argued that a human combatant is likely to desist from causing unnecessary suffering because of human compassion, intuition, and the ability to appreciate “the larger picture, understanding of the intentions behind people’s actions, and understanding of values and anticipation of the direction in which events are unfolding” on the battlefield and hence not attacking *hors de combats*.<sup>127</sup> This idea of desisting from causing unnecessary harm or suffering even to legitimate targets stems from the general principle of humanity. After all, enemy combatants are not enemies at a personal level, but in their capacity as representatives of belligerences. As rightly observed by one philosopher:

War is in no way a relationship of man with man. . . individuals are enemies only by accident; not as men, nor even as citizens, but as soldiers . . . since the object of war is to destroy the enemy state, it is legitimate to kill the latter’s defenders as long as they are carrying arms; but as soon as they lay them down and surrender, they cease to be enemies or agents of the enemy, and they again become mere men and it is no longer legitimate to take their lives.<sup>128</sup>

Taking the lives of those who are wounded or continuously wounding

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<sup>126</sup> *Id.* at 11.

<sup>127</sup> Christof Heyns (Special Rapporteur on Extrajudicial, Summary or Arbitrary Executions), ¶ 55 U.N. Doc. A/HRC/23/47 (Apr. 3, 2013); *see also* ICRC, CUSTOMARY IHL DATABASE Rule 47, available at [https://ihl-databases.icrc.org/customary-ihl/eng/docs/v1\\_rul\\_rule47](https://ihl-databases.icrc.org/customary-ihl/eng/docs/v1_rul_rule47).

<sup>128</sup> A. Van Engeland, CIVILIAN OR COMBATANT?: A CHALLENGE FOR THE 21ST CENTURY 13 (2011) (quoting J.J. Rousseau).

them would undeniably constitute unnecessary suffering. Such conduct and method of combat would surely serve no purpose and is calculated to cause superfluous harm. Of course, the aspect of causing “unnecessary suffering or superfluous harm” will be at the instance of the human combatant as the bearer of the weapon, as the one who has to exercise the responsible use of the weapon. The human combatant has arguably contributed much on weapons capability of causing superfluous harm or otherwise by virtue of the control he exercises over the weapon. To refer for example to the classic control and relationship between the combatant and the weapon, “My Rifle: The Creed of a US Marine” by the retired Major General William H. Rupertus reads as follows:

This is my rifle. There are many like it, but this one is mine. My rifle is my best friend. It is my life. I must master it as I must master my life. My rifle, without me, is useless. Without my rifle, I am useless. I must fire my rifle true. . . My rifle is human, even as I, because it is my life. Thus, I will learn it as a brother. I will learn its weaknesses, its strength, its parts, its accessories, its sights and its barrel. I will ever guard it against the ravages of weather and damage as I will ever guard my legs, my arms, my eyes and my heart against damage. I will keep my rifle clean and ready. We will become part of each other. We will. . . Before God, I swear this creed.<sup>129</sup>

In the case of AWS, it appears that this creed will have to be sworn by the machines with us humans hoping for the best. Thus, it should be borne in mind that stakes are different in the case of increasingly autonomous weapon systems or fully autonomous weapon systems when inquiring whether the rule on the prohibition of weapons that cause superfluous harm or unnecessary suffering. I argue that it is not enough that the weapons that are carried on board are legal weapons or they do not, by themselves cause unnecessary suffering or superfluous harm.

The method of warfare is different, there is no human being to exercise the responsible decision not to cause unnecessary suffering or superfluous harm to the enemy combatant – albeit them being legitimate targets. Now that the weapons are borne by an autonomous machine – the one I have referred to above as a robo-combatant – questions arise, therefore, notwithstanding legal weapons on board, whether the combination of increased autonomy and lethality violate the weapon rule on the obligation not to cause superfluous and unnecessary suffering to the enemy combatants?

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<sup>129</sup> See *My Rifle: The Creed of a US Marine*, ABOUT.COM, available at <http://usmilitary.about.com/od/marines/l/blrifcreed.htm> (last visited July 28, 2014).

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The above question stems from the consideration that machines, unlike human beings, may not have intuition or human consideration as espoused by the philosopher Rousseau: that combatants are only enemies by accident; they are not enemies at a personal level; that they know it is illegitimate to cause unnecessary suffering to those who are *hors de combat* by virtue of wounds, surrender, or other causes for example.

Of course, arguments have been made that there are now robots which are capable of discerning whether a person is in pain or not. However, questions arise whether such technology will be programmed into AWS in the first place and, if it is, whether it would be able to effectively exercise the human discretion not to cause superfluous harm or suffering.

The argument being made here is that if lethal autonomous weapon systems are to be assessed as weapons, they should be assessed as an entity, that is, their increased or full autonomy and lethality put together. It should not, as Schmitt seems to imply, be assessed as separate things. So the question should be whether *lethal* autonomous weapon systems may cause unnecessary suffering or superfluous harm and, therefore, be unlawful weapons *per se*.

The above question, therefore, is not answered by only looking at the design of the weapons on board but by also looking at how the AWS uses them. In view of the requirement to make humanitarian considerations – a requirement that can only be fulfilled by humans – it can be pointed out that chances are high that AWS may not be able to comply with this important rule of international weapons law.

*b. Availability of alternative means*

Another factor that should be considered in ascertaining whether a weapon will violate this rule is the availability of alternative means that will achieve the same military advantage.<sup>130</sup> This consideration when ascertaining whether the rule on the prohibition of causing superfluous harm against those targeted shows that the rule considers both the design factors and user factors. Thus, where a combatant is in possession of two kinds of weapons that can harm the enemy combatant and achieve the same military objective, he or she must choose the one that will not cause unnecessary suffering to the enemy combatants. Of course, it has been emphasized that the alternative weapon must be readily available, for combatants cannot act like golfers who move around with a golf bag full of different kinds of clubs waiting for the right moment to use one of them.<sup>131</sup> Thus, according to

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<sup>130</sup> See CUSTOMARY IHL: MILITARY MANUALS (citing the military manuals of the United States ¶ 88), available at [https://ihl-databases.icrc.org/customary-ihl/eng/docs/src\\_iimima](https://ihl-databases.icrc.org/customary-ihl/eng/docs/src_iimima).

<sup>131</sup> Carnahan, *supra* note 108, at 722.

Carnahan, a weapon can be deemed to be one that causes superfluous suffering if “. . . it is deliberately altered for the purpose of increasing the suffering it inflicts. . . , its military advantages are marginal. . . , [if it is] deliberately selected for the suffering that it inflicts when other, equally effective means are readily available.”<sup>132</sup>

The case in point, however, is more to do with the method of warfare, a situation where a belligerent has a choice to use either a human combatant to deliver weapons or to use autonomous weapon platforms. To this end, the ICRC has implored states to consider whether the use of AWS with increased or full autonomy is necessary in the strict sense of the word.<sup>133</sup>

Various reasons have been given as to why states may prefer the use of autonomous systems. Among the reasons is that increased autonomy in weapon systems is inevitable and that the systems are generally faster and safe to deliver force.<sup>134</sup> Some of these reasons, however, may not be compelling enough especially where they risk violation of important rules of weapons law like the prohibition of weapons that would cause superfluous or unnecessary suffering. As Noel Sharkey has pointed out, the argument that these systems are fast must not be overemphasized: there should be no “rush to kill each other” and it cannot be true that increased autonomy and full autonomy in weapon systems is inevitable because the international community can decide on the issue.<sup>135</sup>

*c. Weapons that render death inevitable*

As pointed out above, and notwithstanding that in armed conflict combatants are licensed to kill each other, the “use of weapons that render death inevitable” are considered contrary to the laws of humanity and cause superfluous harm.<sup>136</sup> The aspect of rendering death inevitable was one of the prime considerations when states decided to prohibit the use of poison,

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<sup>132</sup> *Id.*

<sup>133</sup> ICRC, Statement, Convention on Conventional Weapons Expert Meeting on Autonomous Weapons, (May 13, 2014), *available at* [https://unoda-web.s3-accelerate.amazonaws.com/wp-content/uploads/assets/media/C99C06D328117A11C1257CD7005D8753/file/ICRC\\_MX\\_LAWS\\_2014.pdf](https://unoda-web.s3-accelerate.amazonaws.com/wp-content/uploads/assets/media/C99C06D328117A11C1257CD7005D8753/file/ICRC_MX_LAWS_2014.pdf).

<sup>134</sup> RON ARKIN, LETHAL AUTONOMOUS SYSTEMS AND THE PLIGHT OF NON-COMBATANTS 2 (2015), *available at* <http://www.cc.gatech.edu/ai/robot-lab/online-publications/aisbqv4.pdf>.

<sup>135</sup> Audio Recording: UN Expert Meeting on Lethal Autonomous Weapon Systems: Noel Sharkey’s Presentation (2014), *available at* [http://www.unog.ch/80256EDD006B8954/\(httpAssets\)/D11C3EF955B32937C1257CED0046204D/\\$file/1063.MP3](http://www.unog.ch/80256EDD006B8954/(httpAssets)/D11C3EF955B32937C1257CED0046204D/$file/1063.MP3).

<sup>136</sup> LAWS OF WAR: DECLARATION OF ST. PETERSBURG; NOVEMBER 29, 1868 (2008), *available at* [http://avalon.law.yale.edu/19th\\_century/decpeter.asp](http://avalon.law.yale.edu/19th_century/decpeter.asp) (stating that the use of such weapons ‘would be contrary to the laws of humanity’).

expanding, exploding and “dum-dum” bullets.<sup>137</sup> The existence of many official documents prohibiting and condemning weapons that render death inevitable<sup>138</sup> clearly show states’ revulsion against the idea of causing unnecessary suffering. For good reasons, it is legitimate, for example, to kill enemy combatants as long as they are actively participating in hostilities.<sup>139</sup> If enemy combatants become incapacitated by virtue of wounds or surrender, it is no longer legitimate to kill them.<sup>140</sup> This is where the human consideration is fundamental. Yet, a scrutiny of how AWS will select their targets fundamentally threatens abidance by this rule.

Questions have been raised as to whether AWS can have the human situational awareness to read the general picture and unfolding of events. First, it may be argued that where an autonomous robot is going to target an individual on the basis of facial recognition, the moment it is deployed the death of that particular individual has been rendered inevitable. This will be the case even if there is a change of circumstances for that particular individual – say he chooses to renounce his participation in the conflict.

Second, weapon systems with increased autonomy or full autonomy potentially threaten the important rule of sparing the lives of those placed *hors de combat* by wounds or other conditions. It has been pointed out that AWS may make it difficult if not impossible for the rule to spare the lives of those surrendering.<sup>141</sup> In those circumstances, once the weapon systems are deployed, it may be argued that the death of those who are targeted has been rendered inevitable. Thus, the weapons system itself may be unlawful *per se*.

#### *d. Inevitability of serious permanent disability*

A weapon that causes serious permanent disability is also considered to violate the rule.<sup>142</sup> It is on account of this consideration that blinding lasers and anti-personnel landmines are banned<sup>143</sup> and the employment of

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<sup>137</sup> See ICRC, CUSTOMARY IHL DATABASE Rule 77 (2005), available at [https://ihl-databases.icrc.org/customary-ihl/eng/docs/v2\\_cou\\_us\\_rule77](https://ihl-databases.icrc.org/customary-ihl/eng/docs/v2_cou_us_rule77)

<sup>138</sup> See ICRC, CUSTOMARY IHL DATABASE Rule 70 (2005), available at [https://ihl-databases.icrc.org/customary-ihl/eng/docs/v1\\_cha\\_chapter20\\_rule70?OpenDocument&highlight=civilians](https://ihl-databases.icrc.org/customary-ihl/eng/docs/v1_cha_chapter20_rule70?OpenDocument&highlight=civilians).

<sup>139</sup> See VAN ENGELAND, *supra* note 128, at 12.

<sup>140</sup> ICRC, *supra* note 1, at ¶ 482.

<sup>141</sup> Bonnie Docherty, *Case Against Killer Robots*, HUMAN RIGHTS WATCH (2012), available at <http://www.hrw.org/ru/node/111291/section/7>; Schmitt & Thurnher, *supra* note 78, at 258.

<sup>142</sup> JEAN-MARIE HENCKAERTS ET AL., CUSTOMARY INTERNATIONAL HUMANITARIAN LAW: VOLUME 1, RULES 241 (2005).

<sup>143</sup> *Id.* at 295.

See, e.g., United Nations Additional Protocol to the Convention on Prohibitions or Restriction on the Use of Certain Conventional Weapons: Sweden’s Declaration upon Acceptance, Jan.

incendiary weapons against personnel that necessitated their prohibition.<sup>144</sup> As argued above, weapons that by nature would not cause permanent disability may be able to cause such permanent disability if the user so chooses. When considering conventional weapons, those that did not have to make a decision as to who, when and where to target, it made sense that the assessment focused mainly on the design of the weapon. However, where you have such conventional weapons being borne and used by an autonomous system, I argue that the consideration must be wider than that. Unpredictability becomes the fundamental concern here. One cannot tell whether or not the autonomous system in the employ of the otherwise legal weapons would cause permanent disability when operating in unpredictable environments.

### 3. Prohibition of weapons which are indiscriminate in nature

The other question that needs an answer is how AWS measure up to the international weapons law rules on the prohibition of weapons that are indiscriminate in nature. Article 51(4) of Additional Protocol I provides this rule. As have been highlighted above, although there are similarities, the rule on the prohibition of weapons that are by nature indiscriminate is not the same as the targeting rule of distinction applicable to combatants. Of course, for a combatant to comply with the targeting rule of distinction, he or she must employ a discriminate weapon.<sup>145</sup> Like the other rule discussed above, it is fundamental to appreciate the nature of this rule and what it stands for.

#### a. Customary International Law

The rule on the prohibition of weapons that are by nature indiscriminate is part of customary international law.<sup>146</sup> For that reason, whether a state is a party to Additional Protocol I, or not, becomes immaterial. A state may not develop or deploy AWS if they fail to pass the international customary rule that prohibits indiscriminate weapons.

#### b. Treaty Law

There are a number of treaties that prohibit the use of weapons that are

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15, 1997, 2024 U.N.T.S. 22495; United Nations Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on their Destruction, Preamble, Sep. 18, 1997, 2056 U.N.T.S. 211.

<sup>144</sup> See ICRC, STUDY ON CUSTOMARY IHL: RULE 85 (2016), available at [https://ihl-databases.icrc.org/customary-ihl/eng/docs/v1\\_rul\\_rule85](https://ihl-databases.icrc.org/customary-ihl/eng/docs/v1_rul_rule85).

<sup>145</sup> *Id* at Rule 11, 12.

<sup>146</sup> *Id* at Rule 71.

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indiscriminate in nature. Among other instruments<sup>147</sup>, the most notable ones are Additional Protocol I to the Geneva Conventions<sup>148</sup> and the Rome Statute.<sup>149</sup> The rule was also the reasoning behind the negotiating and adopting of treaties like the Amended Protocol II to the Convention on Certain Conventional Weapons<sup>150</sup> and the Ottawa Convention.<sup>151</sup>

A number of weapons have either been banned or their use restricted as they were found to be indiscriminate in nature. These include chemical, biological and nuclear weapons, poison, anti-personnel landmines, mines, explosives discharged from balloons, V-1 and V-2 rockets, Katyusha rockets, Scud missiles, cluster bombs, booby-traps, incendiary weapons, and environmental modification methods.<sup>152</sup>

*c. State Practice*

There is a consistent practice in support of the rule against the use of indiscriminate weapons. Various military manuals,<sup>153</sup> including of states not party to Additional Protocol I,<sup>154</sup> prohibit the use of indiscriminate weapons and make it a criminal offense to use the same. Many states have publicly condemned the use of such weapons whether in IAC or NIAC.<sup>155</sup> Evidence of state practice against weapons which are by nature indiscriminate is also found in many UN General Assembly resolutions against such weapons.<sup>156</sup> This rule has also been repeatedly reaffirmed in many international meetings noted above.

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<sup>147</sup> See e.g., ICRC, SAN REMO MANUAL ON INTERNATIONAL APPLICABLE TO ARMED CONFLICTS AT SEA ¶ 42(b) (1994).

<sup>148</sup> U.N. Protocol Additional to the Geneva Convention, Art. 51(4), Jan. 23, 1979, 1125 U.N.T.S. 17513.

<sup>149</sup> Rome Statute of the Int'l Criminal Court, Art. 8(2)(b)(xx), Jul. 1, 2002, 2187 U.N.T.S. 38544.

<sup>150</sup> See Protocol on Prohibitions or Restrictions on the Use of Mines, Booby-Traps and Other Devices, Art. 1(2), Dec. 3, 1998, 2048 U.N.T.S. 22495.

<sup>151</sup> See U.N. Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on their Destruction, *supra* note 129, at Preamble.

<sup>152</sup> JEAN-MARIE HENCKAERTS ET AL., *supra* note 148, at 250.

<sup>153</sup> See ICRC, Customary IHL: Military Manuals (specifically Australia, Colombia, Republic of Korea, Sweden and Nigeria), *available at* [https://ihl-databases.icrc.org/customary-ihl/eng/docs/src\\_iimima](https://ihl-databases.icrc.org/customary-ihl/eng/docs/src_iimima).

<sup>154</sup> *Id.* (specifically France and Israel).

<sup>155</sup> See ICRC, 1 CUSTOMARY INT'L HUMANITARIAN LAW 71 (2005), *available at* [https://ihl-databases.icrc.org/customary-ihl/eng/docs/v1\\_rul\\_rule71](https://ihl-databases.icrc.org/customary-ihl/eng/docs/v1_rul_rule71)

<sup>156</sup> See e.g. G.A. Res. 1653 (XVI), U.N. Doc. A/5100 (Nov. 24, 1961); G.A. Res. 3032 (XXVII), U.N. Doc. A/8730 (Dec. 18, 1972); G.A. Res. 3076 (XXVIII), U.N. Doc. A/9030 (Dec. 6, 1973); G.A. Res. 3255 A (XXIX), U.N. Doc. A/9631 (Dec. 9, 1974); G.A. Res. 3032 (XXVII), U.N. Doc. A/8730 (Dec. 18, 1972); G.A. Res. 1565 (XXVIII-O/98), (Jun. 2, 1998).

*d. Case Law*

The Nuclear Weapons case is one of the cases<sup>157</sup> that largely considered the issue of weapons that are indiscriminate in nature. There, the Court affirmed that the rule against the use of weapons that are indiscriminate in nature is one of the “cardinal principles” of IHL and also held that states must never use such weapons.<sup>158</sup>

4. Defining indiscriminate weapons and understanding the rule

The rule on the prohibition of indiscriminate weapons deals only with the lawfulness of a weapon, in this case, the lawfulness of AWS. In other words, the issue with this rule is whether AWS are inherently indiscriminate. Schmitt in discussing this rule in the context of cyber warfare has argued that the “rule does not prohibit imprecise weapons;” rather, it prohibits weapons that are basically “shots in the dark.”<sup>159</sup> He further observed that indiscriminate effects in a particular attack that are a result of “unforeseeable system malfunctioning or reconfiguration do not violate this rule.”<sup>160</sup>

However, just like the other rule above, a careful consideration must be made when subjecting autonomous weapon systems to this rule. Compliance with this rule in terms of conventional weapons is also user-dependent. Where the user and the weapon are combined to make a weapon, the level of autonomy in a weapon becomes a critical issue to consider.

*a. Elements of indiscriminate weapons*

There are two elements that are consistently referred to when deciding whether or not a weapon is indiscriminate in nature. These are:

The capability of directing a weapon against a specific legitimate target;<sup>161</sup> and

The capability to limit the effects of the weapon.<sup>162</sup>

These elements form part of the definition of indiscriminate attacks under customary international law.<sup>163</sup>

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<sup>157</sup> See *Prosecutor v. Martić*, Case No. IT-95-11, Amended Indictment, 2003 I.C.J. (Sept. 9).

<sup>158</sup> See *Legality of the Threat or Use of Nuclear Weapons*, Advisory Opinion, 1996 I.C.J. Rep 78 (July 8), available at <http://www.icj-cij.org/docket/files/95/7495.pdf>.

<sup>159</sup> MICHAEL N. SCHMITT et al., *supra* note 91, at 145.

<sup>160</sup> *Id.* at 146.

<sup>161</sup> See United Nations Protocol Additional to the Geneva Conventions, Art. 51(4)(b), Jan. 23, 1979, 1125 U.N.T.S. 17512.

<sup>162</sup> See *id.* at Art. 51(4)(c).

<sup>163</sup> See ICRC, *supra* note 130, at Rule 12.

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- i. The capability of directing a weapon against a specific legitimate target

This first element succinctly points out that compliance of a weapon with this rule is also user dependent. By asking whether it is possible to direct a weapon against a specific legitimate target, it points to humans as the users or “directors” of the weapon. In the case of AWS with increased autonomy or those that are fully autonomous, the user and the weapon are combined.

In light of the above it would make sense, therefore, to expand the question into two: First, whether it is possible to direct a weapon on board against a specific legitimate target and, second, whether the “weapon system platform” is capable of directing the “lawful weapon” or payload at military objectives. Many official state documents provide that a weapon that cannot be directed against a specific legitimate target is an indiscriminate weapon.<sup>164</sup> Case law has also cited this criterion in deciding whether a weapon is indiscriminate.<sup>165</sup> In order to answer the second question in the affirmative, the weapon system will have not only to understand fully international humanitarian law rules of targeting but also the dynamics of today’s armed conflict. As has been noted above, the IHL rules of targeting cannot be applied to AWS without giving them some combatant status. Therefore, this consideration will depend on whether the international community wants to accept them as combatants in the first place.

- ii. The IHL requirement to limit the effects of a weapon

It goes without saying that the conduct of the user of the weapon has a bearing on the limitations on the effects of a particular weapon – albeit its lawfulness. Thus, many official state documents provide for this criterion.<sup>166</sup> States have long argued that where a weapon “has uncontrollable effects,” such a weapon is deemed to be indiscriminate.<sup>167</sup> It is for that reason that in 1969 the General Assembly passed a resolution against biological and chemical weapons noting that they “are inherently reprehensible because their effects are often uncontrollable and unpredictable.”<sup>168</sup>

In the case of AWS, there is a huge challenge in ascertaining the

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<sup>164</sup> See ICRC, Customary IHL: Military Manuals, available at [https://ihl-databases.icrc.org/customary-ihl/eng/docs/src\\_iimima](https://ihl-databases.icrc.org/customary-ihl/eng/docs/src_iimima),

<sup>165</sup> See Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion, 1996 I.C.J. Rep 588 n. 23 (July 8) (Judge Higgins dissenting), available at <http://www.icj-cij.org/docket/files/95/7495.pdf>.

<sup>166</sup> See ICRC, CUSTOMARY IHL: MILITARY MANUALS, available at [https://ihl-databases.icrc.org/customary-ihl/eng/docs/src\\_iimima](https://ihl-databases.icrc.org/customary-ihl/eng/docs/src_iimima).

<sup>167</sup> ICRC, *supra* note 130, at Rule 71.

<sup>168</sup> See G.A. Res. 2603 (XXIV) (Dec. 16, 1969).

implications of the “indiscriminateness” of the weapon. With this kind of technology, I would argue that the concept of “indiscriminateness” should not be limited to the weapons on board. It should extend to the actual use of the weapons by the AWS. Boothby observes that almost “all weapons are capable of indiscriminate use,”<sup>169</sup> while on the other hand, the fact that a weapon can be used discriminately is not conclusive of its lawfulness.<sup>170</sup> An example is that of nuclear weapons that can arguably be used in such a way that would not affect civilians. The ICRC Guide on weapons review makes it clear that the acceptability of a weapon is not solely dependent on its design but how it is used and other considerations.<sup>171</sup> Thus “consideration of the law of weaponry must. . . be set against the background of the law that regulates how weapons may be used.”<sup>172</sup>

Because AWS in certain circumstances are unpredictable depending on their autonomy, it can be argued that their effects may be difficult to contain in violation of the rule on the prohibition of indiscriminate weapons.

##### 5. Findings of Domestic Legal Review versus International Findings

As has been pointed out, legal review of new weapons is a domestic process that has been largely left to states to carry out. However, the aspect of AWS has sparked debates at the international level. The issue is being considered by the First Committee that closely works with the United Nations Disarmament Commission.<sup>173</sup> The question arises as to which findings will take precedence: those of a national review authority or those of the Convention on Certain Conventional Weapons. Generally, in international law, domestic legislation may not be used to justify infraction of international law.<sup>174</sup> However, all this will depend on whether the findings of the international organization will have the force of law. In the event of the Convention on Certain Conventional Weapons deciding to adopt an instrument outlawing AWS with increased autonomy but without proper human control or those that are fully autonomous, then the findings of a national review authority may not be used to justify the development or deployment of such technology.

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<sup>169</sup> See BOOTHBY, *supra* note 47, at 70.

<sup>170</sup> See *id.* at 72.

<sup>171</sup> See ICRC, *supra* note 13, at 938.

<sup>172</sup> See BOOTHBY, *supra* note 47, at 34; see also Kathleen Lawand, *Reviewing the Legality of New Weapons, Means and Methods of Warfare*, 88 INT’L REV. OF THE RED CROSS 925, 927 (2006).

<sup>173</sup> See <http://www.un.org/en/ga/first/index.shtml>.

<sup>174</sup> See *Inspector-General of Police v. All Nigeria Peoples Party and Others* [2007] NWLR 179 ¶ 37 (Nigeria); see also *Abacha v. Fawehinmi* [2000] NWLR 172 ¶ 5 (Nigeria).

### III. CONCLUSIONS

There are several factors which need to be taken into consideration when conducting a legal review of AWS in terms of Article 36 of Additional Protocol I to the Geneva Convention. First, it is important to ascertain whether the item reviewed is a weapon or means of warfare. AWS with increased autonomy or full autonomy over the critical function of deciding who to kill and making legal calculations on the legality of each individual kill are outside the scope of the traditional weapon. A weapon must be under the proper and meaningful control of a human.

Second, it is fundamental to understand and keep the line between international weapon rules on the prohibition of weapons that are indiscriminate in nature, those that cause superfluous harm and the international humanitarian law targeting rules of distinction and proportionality as applicable to combatants. There is a relationship between these rules but they are not the same. IHL rules of distinction and proportionality must only be applied to machines if the international community takes the conscious decision to accept these weapons as *robot-combatants* because decisions regarding who to kill and the calculation of the legality of an attack are the preserve of human combatants.

Third, for a long time, the international weapons law rules of the prohibition of indiscriminate weapons and those that cause superfluous harm has been interpreted to mean assessment of the lawfulness of a weapon by considering the design of the weapon alone. As rightfully observed by Boothby, with today's technologies, especially AWS, it is paramount to consider user factors in determining the lawfulness of a weapon. In AWS, there are two critical things that are combined: the harmful capability and lethality of the weapons and the autonomy of system in the "critical functions." To decide whether an autonomous system is unlawful *per se*, the autonomy and lethality of the system must be considered as an entity. When considered as an entity, AWS with increased autonomy or those that have full autonomy may not be able to comply with the international weapon customary rules on the prohibition of weapons that are indiscriminate in nature and those that cause superfluous harm.