National Defence Défense nationale

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RISE OF THE MACHINES – MAKING THE CASE AGAINST A GLOBAL BAN ON FULLY AUTONOMOUS WEAPONS

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JCSP 41

Exercise *Solo Flight*

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CANADIAN FORCES COLLEGE – COLLÈGE DES FORCES CANADIENNES
JCSP 41 – PCEMI 41
2014 – 2015

EXERCISE *SOLO FLIGHT* – EXERCICE *SOLO FLIGHT*

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Word Count: 3225

Compte de mots : 3225

> *War without reflection is mechanical slaughter. In the same way that the taking of any human life deserves as a minimum some deliberation, a decision to allow machines to be deployed to kill human beings deserves a collective pause worldwide.*
>
> – United Nations Special Rapporteur Christof Heyns[1]

INTRODUCTION

Human beings have long held deep-rooted fears regarding the potential of machines to develop independent thought and their capacity to employ lethal force against their organic masters. These fears have spawned numerous science fiction stories such as the iconic Terminator movie franchise, which have centered upon the idea of killer robots running amok and murdering people en masse. While a dystopian future of artificially intelligent robots rising up to exterminate humanity is improbable in the near term, the development of Fully Autonomous Weapons (FAWs) by the world's major powers is very much rooted in the present day. It is envisioned that FAWs will possess the capacity to independently select targets and deliver force without any human input or interaction. It is because FAWs take the human element out of the loop regarding the decision to utilize force that they present a host of legal, moral and ethical concerns surrounding their future deployment. These concerns have led to growing calls for a preemptive global ban on FAWs, such as the Campaign to Stop Killer Robots,[2] which would prohibit the development and usage of such weapons by the global community.

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[1] United Nations Special Rapporteur on extrajudicial, summary or arbitrary executions Christof Heyns (speech, United Nations, Office of the High Commissioner for Human Rights, Geneva, Switzerland, May 30, 2013). http://www.ohchr.org/EN/NewsEvents/Pages/DisplayNews.aspx?NewsID=13380&.

[2] An international coalition of Non-Governmental Organizations (NGOs), formed in October 2012 and launched in April 2013, working to preemptively ban fully autonomous weapons. The coalition includes, amongst other NGOs: Human Rights Watch, the International Committee for Robot Arms Control and Mines Action Canada. http://www.stopkillerrobots.org.

Proponents of such a ban have argued that these weapon systems would be incapable of adherence to International Humanitarian Law (IHL) and potentially lead to increased human suffering in conflict zones.[3] In doing so, they have often pointed to the Convention banning Anti-Personnel Landmines, commonly known as the Ottawa Treaty due to Canada's perceived leadership towards its development,[4] as a previous example of success.[5] This paper is an attempt to consolidate discussions of the issues surrounding the usage of FAWs, and explain why the pursuance of a global ban is perhaps not the best use of diplomatic efforts by Canada and other nations. It will draw upon the lessons learned from the prohibition of anti-personnel landmines, as well as other international non-proliferation/non-use agreements, in order to argue that international regulation of FAWs vice banning should be the focus of the global community. Finally, it will present recommendations for possible regulatory parameters that could guide the usage of FAWs and address the majority of legal and ethical issues surrounding them. In doing so, it is hoped that international regulation, vice prohibition, will appear to be the clear choice to allay fears of human slaughter at the hands of killer robots.

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[3] Campaign to Stop Killer Robots, "The Problem," last accessed 5 May 2015, http://www.stopkillerrobots.org/the-problem/.

[4] The Convention was so called because it was the result of a process launched in Ottawa by then Minister of Foreign Affairs Lloyd Axworthy in October 1996. Further information may be obtained under "Introductory Note" at: http://legal.un.org/avl/ha/cpusptam/cpusptam.html.

[5] Thalif Deen, "Global Campaign to Ban Killer Robots Models Landmine Treaty," *Inter Press Service*, April 20, 2013. http://www.ipsnews.net/2013/04/global-campaign-to-ban-killer-robots-will-sidestep-landmines/. The exact text of the "Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on their Destruction" may be found at under "Documents" at: http://legal.un.org/avl/ha/cpusptam/cpusptam.html.

FULLY AUTONOMOUS WEAPONS DEFINED

How quickly is reality approaching the realm of science fiction as it pertains to autonomous killing machines? To answer this question we must first define the term Fully Autonomous Weapon with sufficient detail to allow for a comparison with our preconceived notions of how such a war machine may look and act. Over the past two decades, *unmanned* vehicles have quickly taken on a prominence in military operations. This has specifically been the case with Unmanned Aerial Vehicles (UAVs), colloquially referred to as Drones, which have been used to designate and neutralize targets on the ground.[6] Some military planners have seen these weapons as a huge leap forward from *manned* vehicles thanks to the physical removal of a human operator, thereby reducing the risk of injury to pilots, allowing for miniaturization of the weapon platform, and a greater on-station persistent presence.[7] These unmanned vehicles are not considered autonomous however, as the human operator is still largely in control, albeit remotely. The United States Department of Defense, as part of the world's first public policy regarding autonomy in weapons systems[8], has defined an autonomous weapon system as any "weapon system that, once activated, can select and engage targets without further intervention by a human operator."[9] As such, FAWs should not be considered as merely

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[6] Ian G.R. Shaw, "Predator Empire: The Geopolitics of US Drone Warfare," *Geopolitics* 18, no. 3 (2013): 536-559. http://www.unice.fr/crookall-cours/iup_geopoli/docs/predator-drones.pdf.

[7] Air Marshal Raghu Rajan, "Are the Days of the Manned Combat Aircraft Numbered?," *Indian Defence Review* 27, no. 1 (March 2012): 32-38. Copy available at http://www.indiandefencereview.com/news/are-the-days-of-the-manned-combat-aircraft-numbered/.

[8] Human Rights Watch and International Human Rights Clinic, *Review of the 2012 US Policy on Autonomy in Weapon Systems* (April 16, 2013). http://www.hrw.org/sites/default/files/related_material/4.2013 Review of US Policy on Killer Robots.pdf.

[9] Department of Defense, "Autonomy in Weapon Systems," *Department of Defense Directive* No. 3000.09 (21 November 2012), 13-14. http://www.dtic.mil/whs/directives/corres/pdf/300009p.pdf.

unmanned weapon platforms that incorporate advanced *automated* capabilities, such as an autopilot function for example. Two illustrations of these types of *automated* weapon systems are: the United States Navy's X-47B Unmanned Combat Air Vehicle (UCAV) prototype which can land itself onto moving aircraft carriers;[10] and the deployment by South Korea and Israel of automated sentry guns along their borders which independently identify targets and alert human operators who must ultimately make decision to fire.[11] In contrast, *autonomous* weapons require no human input and can decide to fire on their own. It is this key distinction that presents significant technological hurdles to weapon designers and makes FAWs especially worrisome to some.

PRESENTING THE LEGAL ISSUES

As with any weapon system, FAWs will need to be designed, developed and deployed in a manner that is consistent with international law. Article 36 of Additional Protocol I to the Geneva Conventions[12] states that all nations are required to ensure that new weapon systems are not "indiscriminate by nature" or "likely to cause unnecessary suffering or superfluous injury."[13] Additionally, in order to be consistent with international humanitarian law, two important principles must govern their usage: the

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[10] Spencer Ackerman and Raya Jalabi, "US Navy Makes History by Landing Unmanned Drone on Aircraft Carrier," *The Guardian*, 10 July 2013. http://www.theguardian.com/world/2013/jul/10/us-navy-x47b-drone-aircraft-carrier.

[11] Noah Shachtman, "Robo-Snipers, 'Auto-Kill Zones' to Protect Israeli Borders," *Wired*, 4 June 2007. http://www.wired.com/2007/06/for_years_and_y.

[12] United Nations, *Protocol Additional to the Geneva Conventions of 12 August 1949, and Relating to the Protection of Victims of International Armed Conflicts (Protocol I)* (Geneva: UN, 8 June 1977), art. 36. https://treaties.un.org/doc/Publication/UNTS/Volume 1125/volume-1125-I-17512-English.pdf.

[13] Jeffrey S. Thurnher, "The Law that Applies to Autonomous Weapon Systems," *American Society of International Law Insights* 17, no. 4 (18 January 2013). http://www.asil.org/insights/volume/17/issue/4/law-applies-autonomous-weapon-systems.

principles of *Distinction* and *Proportionality*. Put simply, anyone (or anything) using a particular weapon must be able to distinguish between combatants[14] and civilians, as well as military and civilian targets,[15] and to avoid collateral damage incommensurate with the anticipated military payoff.[16] Finally, any new weapon must satisfy the requirements of the Martens Clause[17], which has long been an important staple of customary international law. The essence of the clause, which is found within Article 1 of Additional Protocol I to the Geneva Conventions, requires that any new weapons systems comply with "the principles of humanity and the dictates of the public conscience."[18] Broadly interpreted, this could mean that any weapon system whose very nature is deemed to be immoral and contrary to collective world opinion may be in contravention of the Laws of Armed Conflict and considered impermissible as a result.[19]

Whether or not FAWs will be able to satisfy these legal requirements for their employment is difficult to predict at this time. Their ability to do so will likely be

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[14] According to the International Red Cross' Customary International Humanitarian Law database, the term "combatant" is deemed to be any member of a state's organized armed forces as well as civilians who "take a direct part in hostilities." (Chapter 1, Rule 3. Definition of Combatants). https://www.icrc.org/customary-ihl/eng/docs/v1_cha_chapter1_rule3.

[15] United Nations, *Protocol Additional*…, art. 48.

[16] *Ibid*, art. 51(5)(b), and art. 57(2)(iii).

[17] The Martens Clause takes its name from Fyodor Fyodorovich Martens, a Russian delegate to the Hague Peace Conference 1899 and is based upon a speech he delivered 29 July 1899 regarding the "Convention with Respect to the Laws of War on Land (Hague II)". The Martens Clause was thus included as part of the preamble to the Convention. The principle of the clause has since been reflected thoughout customary international law. For further general information on the Clause you are directed to the following resource: Rupert Ticehurst, "The Martens Clause and the Laws of Armed Conflict," *International Review of the Red Cross* no. 317 (30 April 1997). https://www.icrc.org/eng/resources/documents/misc/57jnhy.htm.

[18] United Nations, *Protocol Additional*…, art. 1(2).

[19] Tyler D. Evans, "At War With The Robots: Autonomous Weapon Systems and the Martens Clause," *Hofstra Law Review* 41, no. 3 (Spring 2013): 697-733. http://www.hofstralawreview.org/wp-content/uploads/2013/09/DD.1.Evans_.final2_.pdf.

dependent upon the continued advancement of technology. Groups such as Human Rights Watch (HRW) have already argued that they do not believe that FAWs will easily possess the inherent capabilities necessary to distinguish combatants from civilians on the modern battlefield, nor to understand the context required in order to judge the necessary proportional use of force.[20] However, the pace of technological development regarding artificial intelligence systems is accelerating and already starting to produce systems with sophisticated pattern recognition abilities exceeding than that of humans. These systems are beginning to be able to accurately determine when someone is lying based upon contextual analysis and recognition of visual cues.[21] Given this reality, it is not hard to imagine that FAWs could soon be equipped to confront the same difficult and contextual decisions that human soldiers often face on the modern battlefield when trying to distinguish between combatants and civilians. Regardless of which position you take with respect to the potential of future technology, it is not inconceivable that the risks to civilians could also be lessened via regulation, allowing for the usage of FAWs. Examples of such regulation could include restricting FAWs to only targeting identifiable combat vehicles, thus easing the problem of distinction, and limiting them to the use of non-lethal ordinance (i.e. electroshock weapons, rubber bullets, etc.), thereby easing the problem of proportionality.

Perhaps just as important as adherence to the principles of Distinction and Proportionality, will be an acceptance of a suitable accountability framework that would

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[20] Human Rights Watch, *Losing Humanity: The Case Against Killer Robots* (November 2012), 30-34. http://www.hrw.org/sites/default/files/reports/arms1112_ForUpload.pdf.

[21] Will Dunham, "If You Want To Fake It, Don't Do It Around This Computer," *Reuters* (21 March 2014). http://www.reuters.com/article/2014/03/21/science-faking-idUSL2N0MH1VA20140321.

govern their usage and hold individuals responsible when FAWs violate international law. If a human soldier violates the Laws of Armed Conflict there are systems in place that may hold him or her accountable for their actions, deterring both the individual and the collective from perpetrating such actions. However, if a FAW violates international law, it may be unclear who should be held responsible as a machine cannot logically be considered responsible for its actions, or at least until artificial intelligence systems are able to convey sufficient self-awareness to do so. Critics of FAWs argue that without someone who can be held to account for their actions, the ability for international law to deter violations will be severely weakened.[22] There are two possible solutions to this problem. First, the designers and manufacturers of such weapons could potentially be held to account for any technical defects that contribute to a violation of international law. In this case any unintended killing of civilians would be considered a legal accident and the manufacturer, if found liable, would be made to pay for any damages caused and to compensate the victims or their families. Legally, this would likely be extremely problematic as the victims involved would most likely come from impoverished and war-torn circumstances and lack the resources to engage FAW producers in the legal arena. Moreover, manufacturers would most likely simply incorporate any estimated costs associated with potential "accidents" into the up front sticker price of their merchandise, thus making the incentive to make the necessary investments to improve their products unlikely.[23] More realistically, it is the military commander who decides to deploy FAWs

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[22] Human Rights Watch, *Losing Humanity*…, 42.

[23] Daniel N. Hammond, "*Autonomous Weapons and the Problem of State Accountability*," *Chicago Journal of International Law* 15, no. 2, art. 8 (Winter 2015): 665-667. http://chicagounbound.uchicago.edu/cgi/viewcontent.cgi?article=1085&context=cjil.

who could shoulder the responsibility for their actions. Similar to the decision making process a commander uses to decide whether or not to fire artillery into a populated urban area, he or she would need to evaluate all relevant data to determine if the situation warrants the deployment of FAWs given the associated risks. This type of thinking was formally incorporated into the U.S. Department of Defense's directive on autonomous weapons. It states:

> Persons who authorize the use of, direct the use of, or operate autonomous and semi-autonomous weapon systems must do so with appropriate care and in accordance with the law of war, applicable treaties, weapon system safety rules, and applicable rules of engagement (ROE).[24]

Any future international regulation making military commanders accountable for the actions of FAWs will encourage them to exert more control over their use, deploying them only in ways that minimizes the risk to civilians. This will also necessitate the proper training of commanders in their legitimate use.

THE ETHICAL DILEMA

Even if FAWs can overcome the majority of legal hurdles before them by demonstrating an ability to adhere to the principles of Distinction and Proportionality while allowing for accountability, there remain some serious ethical criticisms that have been levied against them. These ethical concerns may fuel negative perception of FAWs and cause them to run afoul of the Marten's clause, effectively rendering them impermissible under customary international law and supporting the case for an international ban. These concerns boil down to two simple questions. First, is it wrong to

[24] Department of Defense, "Autonomy in Weapon Systems…, 3.

remove humans from the process of killing other humans? And, will FAWs, like drones, potentially desensitize decision makers to the consequences of war by distancing them from their own human costs of waging it?[25] These ethical questions are too difficult to answer in the context of this paper but certainly merit philosophical discussion elsewhere. However, for the purposes of this paper it will be argued that, as long as FAWs can be regulated in such a manner as to reduce harm to civilians, they will meet the necessary moral challenge they potentially represent. George R. Lucas, Jr., a professor of Ethics and Public Policy at the U.S. Navy's Naval Postgraduate School has argued that the question of whether or not FAWs can "be ethical" is of minimal importance. The real issue, he posits, is whether or not they can perform their functions at a higher level than a human soldier.[26] After all, humans are hardly perfect ethical creatures either. Indeed, FAWs may possess a number of distinct advantages over human soldiers, which could prevent future violations of international law that might otherwise occur if imperfect humans are left to themselves to wage war. These include superior sensory capabilities enabling better situational awareness, faster computational speed allowing for the consideration of multiple courses of action, and a lack of non-helpful emotions such as anger or fear. Furthermore, their likely ability to independently observe, record and report infractions may actually act as deterrence to unethical behavior by other combatants on the battlefield.[27] Therefore, if FAWs can be properly regulated so as to reduce the risk of

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[25] John Lewis, "The Case for Regulating Fully Autonomous Weapons," *The Yale Law Journal* 124, no. 4 (January-February 2015): 1312-1313. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2528370.

[26] George R. Lucas, Jr., "Automated Warfare," *Stanford Law & Policy Review* 25, no. 2 (June 2014): 331. https://journals.law.stanford.edu/sites/default/files/stanford-law-policy-review/print/2014/06/lucas_25_stan._l_poly_rev_317_final.pdf.

harm, and allow for leveraging of their superior capabilities over human soldiers in preventing possible violations of international law, would it not be ethical to make the attempt, thus making any preemptive banning immoral?

THE FUTILITY OF A PROHIBITIVE BAN

When the Ottawa Treaty formally banned anti-personnel landmines in 1997 it was hailed by many global human rights activists as a positive step towards the protection of civilians and non-combatants from the ravages of war. However, despite the insistence by certain groups that such a ban should be similarly considered for Fully Autonomous Weapons, a closer examination reveals cause for concern. Nearly two decades after the launch of the ban, 35 states have yet to sign on. Non-signatories include many of the world's major military powers such as the United States, Russia, China and India, in addition to many of the world's notorious rogue regimes like North Korea and Iran. These countries have all invoked the principle of "military necessity" in declining to participate.[28] In refusing to sign the treaty, the United States stated that it was because anti-personnel mines were deemed necessary to secure the border between North and South Korea given the numerical superiority of the North Korean military.[29] Put bluntly, anti-personnel mines were too useful to give up. Similarly, attempts to ban cluster

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[27] Patrick Lin, George Bekey and Keith Abney, "Autonomous Military Robotics: Risk, Ethics, and Design" (Report for the US Department of Navy - Office of Naval Research, Polytechnic State University, December 20, 2008), 1. http://ethics.calpoly.edu/ONR_report.pdf.

[28] Rachel Good, "Yes We Should: Why the U.S. Should Change Its Policy Toward the 1997 Mine Ban Treaty," *Northwestern Journal of International Human Rights* 9, no. 2, art. 4 (Spring 2011): 223. http://scholarlycommons.law.northwestern.edu/cgi/viewcontent.cgi?article=1113&context=njihr.

[29] Emily Alpert, "Why Hasn't the U.S. Signed an International Ban on Land Mines?," *Los Angeles Times: World Now*, 5 April 2012. http://latimesblogs.latimes.com/world_now/2012/04/mine-treaty-us-ottawa-convention.html.

munitions as part of the Oslo Convention in 2008 have been unable to obtain the support of the major states that use them.[30] These two examples illustrate a very important point: that if a particular weapon system is frequently used by a state, or if its perceived military utility is deemed great enough, then it is highly unlikely that states will accept a full ban on its usage. This revelation is particularly germane to the case of Fully Autonomous Weapons, as military analysts have begun to suggest that they could represent the greatest revolution in war-fighting technology since the advent of steel and gunpowder.[31] As a result, it has been argued by some knowledgeable scholars that it would be unrealistic to hope that the world's major powers would agree to an outright ban on FAWs, particularly if some of them insist on continuing to develop them.[32] As a result, it is argued that the better approach towards confronting the risks posed by FAW technology would be to establish minimum standards for their development and specific parameters for their use. Such a tactic would likely garner greater international support and compliance.[33]

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[30] Joseph Anzalone, "The Virtue of a Proportional Response: The United States Stance Against the Convention on Cluster Munitions," *Pace International Law Review* 22, no. 1, art. 5 (Winter 2010): 184-185, 204. http://digitalcommons.pace.edu/cgi/viewcontent.cgi?article=1028&context=pilr.

[31] John Pike, "Coming to the Battlefield: Stone-Cold Robot Killer," *The Washington Post*, 4 January 2009. http://www.washingtonpost.com/wp-dyn/content/article/2009/01/02/AR2009010202191.html.

[32] Kenneth Anderson and Matthew Waxman, "Killer Robots and the Laws of War," *The Wall Street Journal,* 3 November 2013. http://www.wsj.com/articles/SB10001424052702304655104579163361884479576.

[33] *Ibid*. By way of example, the British government has publically stated its opposition to a treaty ban on autonomous weapons but has also called for the development of "common standards for the weapons' use within the laws of war."

REGULATORY RECOMMENDATIONS

Similar to the Amended Protocol II of the Geneva Conventions, which sought to regulate landmines,[34] the international community should consider negotiating a formal set of regulations that would outline the parameters under which FAWs may be designed, developed and utilized. These parameters would seek to ensure compliance with International Humanitarian Law and respect for the principles of Distinction and Proportionality. Ultimately, the requirement to reduce the risk of civilian casualties would provide a guiding theme to their development and usage. Possible parameters could include:

- *Technical Specifications*. Any regulatory framework could include minimal technical specifications that must be satisfied prior to the operational deployment of FAWs. Examples of such specifications could relate to the relative quality of onboard sensors and computational capabilities in order to ensure that a specific FAW is adequately equipped to identify suitable targets and understand the context under which the engagement is occurring.

- *Suitable Environments for Employment*. The use of FAWs will always center on the potential harm that they could cause to civilians. As such, the easiest way to ensure that they do no harm will be to refrain from deploying them in areas where there is significant population density. This may restrict the usage of FAWs to

[34] United Nations, *Protocol on Prohibitions or Restrictions on the Use of Mines, Booby-Traps and Other Devices as amended on 3 May 1996 (Protocol II as amended on 3 May 1996) annexed to the Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons which may be deemed to be Excessively Injurious or to have Indiscriminate Effects* (Geneva: UN, 3 May 1996). https://treaties.un.org/doc/Publication/MTDSG/Volume II/Chapter XXVI/XXVI-2-b.en.pdf.

isolated areas of operation until such time as the technology can be adequately proven. Furthermore, parameters related to non-favorable weather conditions, which could interfere with a FAW's onboard systems, could also be included.

- *Permissible Targeting Criteria*. Combatants on the modern battlefield are less likely to wear uniforms or identifying insignia. Furthermore they may seek to blend into the civilian population. Given the perceived difficulty in programming FAWs to accurately identify such targets, restrictions upon their ability to target individual "on foot" personnel may be prudent until such time as the technology can be adequately proven. Combat vehicles and platforms may meet the requirements for permissible targets by early generation FAWs.

- *Level of Human Control/Supervision*. The degree of human control and supervision of FAWs will be critical in receiving acceptance for their use from civilian populations. As such, the mandatory inclusion of supervisory requirements combined with override or shutdown capabilities (i.e. a kill switch) will likely be a necessity under any regulatory framework.

- *Level of Lethality*. Until such time as the applicable technology has been proven and FAWs can be trusted to not violate the Laws of Armed Conflict, their potential harm may be greatly mitigated by the restriction of their onboard ordinance to non-lethal means only. This would undoubtedly minimize the overall flexibility of FAWs but may serve to free up human soldiers from less risky tasks such as cordon security or crowd control.

- *Level of Mobility*. Limiting the mobility of FAWs may be an important measure to minimize their ability to do harm. Restricting FAWs to static use only would essentially mean that they could only be used for Defensive operations.

- *Maintenance Requirements*. Mandated requirements for regular maintenance of FAW systems would help to ease concerns of malfunctions leading to violations of international law. These requirements may include such tasks as complete diagnostics analysis following each combat operation or following a set period of time in order to ensure that each FAW is operating within establish parameters.

A regulatory scheme focusing on these sorts of parameters could form the basis for international agreement. Furthermore, combined with international endorsement of the principle of "Commander's Responsibility" to protect as part of an accountability framework, it is possible that they could pave the way for the responsible use of FAWs in accordance with International Humanitarian Law.

> *The unknown future rolls toward us. I face it, for the first time, with a sense of hope. Because if a machine, a Terminator, can learn the value of human life, maybe we can too.*
>
> – Sarah Connor, Terminator 2: Judgment Day[35]

CONCLUSION

This paper has attempted to outline the relevant issues surrounding the development of Fully Autonomous Weapons by the world's major powers. These future weapon systems seek to remove the human element from the targeting and engagement

[35] James Cameron, *Terminator 2: Judgement Day* (1991, United States, TriStar Pictures)

equation and, in doing so, potentially change the nature of warfare itself as the machines of war gain the ability to decide who lives and who dies. Fears of robotic Armageddon inspired by pop culture have only served to muddy the waters regarding the employability of FAWs on the modern battlefield. This has resulted in international organizations and activists calling for a ban on FAWs citing the relevant legal, moral and ethical dilemmas that they present. Such a ban, they argue, could take the form of the Convention banning anti-personnel landmines due to the perceived similarities FAWs share with them. However, the fact remains that recent technological advances in the fields of artificial intelligence, computing and robotics have placed the possibility of autonomous killing machines within the grasp of military planners. It is unrealistic that the world's major powers would be willing to completely abandon the enormous potential and military utility that FAWs represent, thus making any potential global ban unlikely to be effective.

The argument presented herein is that a regulatory strategy focusing on limiting the ability of FAWs to endanger non-combatants and civilians, in accordance with the requirements of international laws, stands a much better chance of success of limiting any perceived risk that they pose. American psychologist and philosopher Burrhus Frederic (B.F.) Skinner once wrote, "The real problem is not whether machines think but whether men do."[36] Similarly, mankind need not fear the rise of these machines if it is properly prepared to discuss how best to control them.

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[36] B.F. Skinner, *Contingencies of Reinforcement: A Theoretical Analysis* (New York: Appleton-Century-Crofts, 1969), chap. 9. https://books.google.ca/books?id=yLn6AwAAQBAJ&pg=PT46&dq=Contingencies+of+Reinforcement&hl=en&sa=X&ei=aRJSVbvGKIS0yATtk4HIBg&redir_esc=y - v=onepage&q&f=false.

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