HUMAN RIGHTS QUARTERLY

Human Rights and the use of Autonomous Weapons Systems (AWS) During Domestic Law Enforcement[1]

*Christof Heyns**

ABSTRACT

Much attention has been paid during the last couple of years to the emergence of autonomous weapons systems (AWS), weapon systems that allow computers, as opposed to human beings, to have increased control over decisions to use force. These discussions have largely centered on the use of such systems in armed conflict. However, it is increasingly clear that AWS are also becoming available for use in domestic law enforcement. This article explores the implications of international human rights law for this development. There are even stronger reasons to be concerned about the use of fully autonomous weapons systems—AWS without meaningful human control—in law enforcement than in armed conflict. Police officers—unlike their military counterparts—have a duty to protect the public. Moreover the judgments that are involved in the use of force under human rights standards require more personal involvement that those in the conduct of hostilities. Particularly problematic is the potential impact of fully autonomous weapons on the rights to bodily integrity (such as the right to life) and the right to dignity. Where meaningful human control is retained,

* *Christof Heyns* is Professor of Human Rights Law, University of Pretoria and United Nations Special Rapporteur on extrajudicial, summary, or arbitrary executions.

1. This article is based on a presentation made by the author at the informal expert meeting organized by the state parties to the Convention on Certain Conventional Weapons (CCW) 13–16 May 2014, Geneva, Switzerland. *See* http://bit.ly/1jSlCro. *See also* Human Rights Council, 23d Sess., Agenda Item 3, U.N. Doc A/HRC/23/47, *Report of the Special Rapporteur on Extrajudicial, Summary or Arbitrary Executions, Christof Heyns* (9 Apr. 2013), *available at* United Nations, Press Release, UN Human Rights Expert Calls for a Moratorium on Lethal Autonomous Robots (30 May 2013), *available at* http://www.ohchr.org/EN/NewsEvents/Pages/DisplayNews.aspx?NewsID=13380&; *Report of the Special Rapporteur on Extrajudicial, Summary or Arbitrary Executions*, U.N. Doc A/69/265, ¶ ¶ 65–89 (Oct. 2014) [hereinafter *Report of the Special Rapporteur* Oct. 2014].

machine autonomy can enhance human autonomy, but at the same time this means, higher standards of responsibility about the use of force should be applied because there is a higher level of human control. However, fully autonomous weapons entail no meaningful human control and, as a result, such weapons should have no role to play in law enforcement.

I. INTRODUCTION

The international community is currently engaged with questions of how to deal with the potential benefits and risks of technology for human existence on a wide range of fronts.[2] This issue is raised in a particularly stark fashion by the emergence of weapons systems with onboard computers to make decisions concerning the release of force, including deadly force, against human beings, without direct human involvement. Exactly when such weapons will become available might be debated, but there can be little doubt that the current trajectory is in that direction.

The idea that autonomous weapons systems (AWS) may have the power to determine whether force will be used against human beings raises far-reaching legal, ethical, and practical questions. In its most dramatic form the question is whether machines are competent to make decisions about life and death. There are two distinct components to this issue: are machines technically capable of making the required judgment calls, for example, about who to target and how much force to use? In other words, *can they do it*? But moreover, assuming that they can do it, is it appropriate for robots to have such power over humans? *Should they do it*? Allowing robots to exercise the power of life and death over humans would entail crossing a significant line: Ultimate control over what many see as the highest human good—life itself—will be transferred to computers. Moreover, it is difficult to imagine what other powers will then be outside their remit and where the further trajectory of technological development will lead.

So far, the debate has largely concerned the possible use of AWS (also referred to here as "machines" or "robots") during armed conflict. Discussions of this topic have taken place in international *fora*,[3] and the issue has been debated in popular literature.[4] The legal as well as ethical implications of the use of AWS during armed conflict have been the subject of many articles

2. *See, e.g.*, Erik Brynjolfsson & Andrew McAfee, The Second Machine Age: Work, Progress and Prosperity in a Time of Brilliant Technologies (2014).
3. *See supra* note 1. Others include the International Committee of the Red Cross who held an expert meeting from 26–28 Mar. 2014, *available at* http://www.icrc.org/eng/resources/documents/report/05-13-autonomous-weapons-report.htm.
4. *See, e.g.*, P.W. Singer, Wired for War: The Robotics Revolution and Conflict in the 21st Century (2009).

in academic journals.[5] A global civil society campaign was launched calling for the ban of such systems, supported by a range of ethicists, lawyers, roboticists, and others, including myself.[6]

It now seems increasingly possible that AWS may also find their way into domestic law enforcement. So far, this development has not attracted much attention.[7] The aim of this contribution is to take this aspect of the debate further.[8]

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5. *See* Marco Sassoli, *Autonomous Weapons and International Humanitarian Law: Advantages, Open Technical Questions and Legal Issues to Be Clarified*, 90 Int'l L. Stud. 308 (2014); Bernhard Koch, *Of men and Machines. What Does the Robotization of the Military Mean From an Ethical Perspective*? Ethics& Armed Forces (2014); Daniel Statman, *Drones, Robots and the Ethics of War*, Ethics & Armed Forces (2014); Deborah G. Johnson & Merel E. Noorman *Responsibility Practices in Robotic Warfare*, Military Rev. 12 (2014); MW Byrnes, *Nightfall: Machine Autonomy in Air-to-Air Combat*, 48 Air & Space Power J. 12 (2014); Frank Sauer, *Autonomous Weapons Systems. Humanising or Dehumanising Warfare?*, 4 Global Governance Spotlight (2014); Jörg Wellbrink, *My new Fellow Soldier—Corporal Robot?*, Ethics & Armed Forces (2014); KB Sandvik et al., The Struggle to ban Killer Robots, Bull.Atomic Scientists (2014); Malcolm Lucard, *Programmed for War,* 1 Red Cross Red Crescent 4 (2014); Ronald C. Arkin, *Lethal Autonomous Systems and the Plight of The Non-Combatant*, Ethics & Armed Forces (2014); Stephen Goose, *The Need for a Preemptive Prohibition on Fully Autonomous Weapons*, Ethics & Armed Forces (2014); Kenneth Anderson & Matthew C. Waxman, *Law and Ethics for Robot Soldiers*, Columbia Law School Public Law & Legal Theory Working Paper Group, Paper Number 12–313 (2012); Kenneth Anderson & Matthew C. Waxman, *Law and Ethics for Autonomous Weapon Systems: Why a Ban Won't Work and How the Laws of War Can,* American University Washington College of Law Research Paper No. 2013–11; Peter Asaro, *On Banning Autonomous Weapon Systems: Human Rights, Automation and the Dehumanisation of Lethal Decision-Making*, 94 Int'l Rev. Red Cross 687 (2012); Peter M. Asaro, *Robots and Responsibility From a Legal Perspective* (n.d), *available at* http://www.peterasaro.org/writing/ASARO%20Legal%20Perspective.pdf; Ronald C. Arkin, *Governing Lethal Behaviour: Embedding Ethics in A Hybrid Deliberative/Reactive Robot Architecture*, Technical Report GIT-GVU-07-11 (2011), *available at* http://www.cc.gatech.edu/ai/robot-lab/online-publications/formalizationv35.pdf; Benjamin Kastan, *Autonomous Weapons Systems: A Coming Legal "Singularity*?," J. L. Tech. & Pol'y 45 (2013); Gary E. Marchant et al., *International Governance of Autonomous Military Robots*, XII Col. Sci. & Tech. L. Rev. 280 (2011).
6. *See* http://www.stopkillerrobots.org/.
7. The most significant early contribution in this regard is the publication by Human Rights Watch & International Human Rights Clinic, Shaking the Foundations: The Human Rights Implications of Killer Robots (2014), *available at* http://www.hrw.org/sites/default/files/reports/arms0514_ForUpload_0.pdf [hereinafter Shaking the Foundations]. *See also* Statement by Brian Wood, Head of Arms Control and Security Trade, International Secretariat, Amnesty International, *available at* http://www.unog.ch/80256EDD006B8954/%28httpAssets%29/1E7C4FC2E94376D6C1257CD7006A8698/$file/NGOAmnesty_MX_LAWS_2014.pdf.
8. The law enforcement paradigm applies during ordinary domestic law enforcement, as well as during anti-terrorism and other actions also in foreign countries in situations that do not constitute armed conflict e.g. in a geographical area that is removed from established battlefields, without a *nexus* to an armed conflict. *See* Noam Lubell & Nathan Derejko, *A Global Battlefield? Drones and the Geographical Scope of Armed Conflict*, 11 J. Int'l Crim. Just. 8 (2013); U.N. Doc. A/HRC/14/24/Add.6, at 16, ¶ 48, *available at* http://www2.ohchr.org/english/bodies/hrcouncil/docs/14session/A.HRC.14.24.Add6.pdf.

During armed conflict (often called war), the rules of international humanitarian law (IHL) are dominant. [9] During law enforcement, however, international human rights law applies to the exclusion of IHL. The focus here will thus be on the application of international human rights law to AWS within a law enforcement context. While law enforcement may also take place extraterritorially, for example, in the context of counterterrorism, the examples and discussion here will center on the possible use of AWS during domestic law enforcement (often called policing).

International human rights law is much more restrictive about the use of force than IHL. Some commentators even talk about "the different starting points of the two bodies of law: for human rights law it is the right to life; for humanitarian law, the right to kill."[10] Although this is an oversimplification, it does serve to convey the restrictive role that international human rights law plays with respect to the use of force, and in particular the use of deadly force.

Although law enforcement officials are allowed to use force under certain circumstances, such powers are strictly limited. They have a positive duty to protect the population and their rights,[11] and deadly force may only be used to serve that purpose. Clearly, the relationship between a state and those under its jurisdiction for the purpose of law enforcement is very different from the relationship between a state and its enemies during armed conflict. Therefore, it is only to be expected that the use of AWS as part of law enforcement will be subjected to much higher levels of scrutiny than its use during armed conflict, where its use is already deeply contested.

Under IHL there is a branch of law dealing with the legality of weapons, namely weapons law.[12] While international human rights law places stringent restrictions on the use of force and firearms, it imposes relatively few of its own limitations on the kinds of weapons that may be developed and manufactured.[13] In most cases where weapons are illegal under IHL,

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9. *Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion*, ICJ Reports 226, ¶ 25 (1996), International Court of Justice (ICJ), 239–40, 8 July 1996, *available at* http://www.icj-cij.org/docket/files/95/7495.pdf.
10. *See* Sandesh Sivakumaran, *International Humanitarian Law, in* International Human Rights Law 535 (Daniel Moeckli, Sangeeta Shah, & Sandesh Sivakumaran eds., 2013). It is an over-simplification because there are limits on the right to kill during armed conflict, as well as limits on the right to life during law enforcement.
11. *See, e.g.*, Code of Conduct for Law Enforcement Officials, *adopted* by G.A. Res. 34/169 (17 Dec. 1979) [hereinafter Code of Conduct].

    > Law enforcement officials shall at all times fulfill the duty imposed upon them by law, by serving the community and by protecting all persons against illegal acts, consistent with the high degree of responsibility required by their profession." According to Article 2 of the Code: "In the performance of their duty, law enforcement officials shall respect and protect human dignity and maintain and uphold the human rights of all persons.

    Id. art. 1.
12. *See* William H. Boothby, Weapons and the Law of Armed Conflict (2009).
13. States are required under the Basic Principles on the Use of Force and Firearms by Law Enforcement Officials, *adopted,* Eighth United Nations Congress on the Prevention of Crime and the Treatment of Offenders, Havana, Cuba (27 Aug.– 7 Sept. 1990),

they are also prohibited in a law enforcement context.[14] The answer to the question of whether AWS will be prohibited under IHL is thus bound to have an important effect on its availability for use during law enforcement as well. However, I argue that there are independent reasons why AWS with full machine autonomy should not be used in policing, irrespective of its fate in war.

The advent of AWS is part of a broader process of increased depersonalization of the use of force through unmanned weapons systems. The first generation of such unmanned systems on the battlefield—now on active duty for more than a decade—took the form of weapons platforms that were remotely controlled by humans.[15] Planes or other platforms for force projection with no human physically on board are, by now, well established in the military context, where they are called unmanned aerial vehicles (UAVs), remotely piloted aerial vehicles (RPAVs), or simply armed drones.[16]

AWS represent the second generation of unmanned systems.[17] The decision to release force is no longer taken by a human via remote control, but by a computer. Autonomous systems are already used on the battlefield against incoming munitions and may well become available for use against human targets as well. This will increase the depersonalization of the use of

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available at http://www.ohchr.org/EN/ProfessionalInterest/Pages/UseOfForceAndFirearms.aspx [hereinafter Basic Principles on the Use of Force] to "[p]rohibit the use of those firearms and ammunition that cause unwarranted injury or present an unwarranted risk"; and also to "[e]nsure that firearms are used only in appropriate circumstances and in a manner likely to decrease the risk of unnecessary harm." *Id.* Basic Principle, 11(b) and (c), Basic Principle 3 provides that "non-lethal incapacitating weapons should be carefully evaluated in order to minimize the risk of endangering uninvolved persons, and the use of such weapons should be carefully controlled." *See generally* Stuart Casey-Maslen, Weapons Under International Human Rights Law (2014). Many states have their own domestic legal rules on what are to be considered lawful weapons or how their use is to be regulated.

14. The case of tear gas and expanding bullets which may be used during law enforcement but not during armed conflict can be seen as an exception. *See* Blaise Cathcart, *Legal Dimensions Of Special Forces And Information Operations, in* The Handbook of the International Law of Military Operations 395, 400 (Terry D. Gill & Dieter Fleck eds., 2010).
15. *See e.g.*, Avery Plaw, Matthew S. Fricker & Carlos Colon, The Drone Debate: A Primer on the U.S. Use of Unmanned Aircraft Outside Conventional Battlefields 13–45 (2016).
16. Ryan J. Vogel, *Drone Warfare and the Law of Armed Conflict*, 39 Denver J. Int'l L. & Pol'y, 101, 105 (2010); Mary Ellen O'Connell, Unlawful Killing With Combat Drones: A Case Study of Pakistan 2004–2009, at 9, Notre Dame Law School Legal Studies Research Paper 1 (2010); Noam Lubell, Extraterritorial Use of Force Against Non-State Actors (2010); C Jenks, *Law From Above: Unmanned Aerial Systems, use of Force, and the law of Armed Conflict*, 85 N. Dakota L. Rev. 649, 656 (2009); William O'Hara, *Drone Attacks and Just war Theory*, Small Wars J. 4 (2010); Jordan J. Paust, *Self-Defense Targetings of Non-State Actors and Permissibility of U.S. use of Drones in Pakistan*, 19 J. Transnat'l L. & Pol'y 237 (2010).
17. AWS are not by definition unmanned systems—though in many cases they are likely to be. Humans can be on board to take care of the noncritical functions, unrelated to targeting, such as navigation. Human and machines can also collaborate as far as targeting is concerned.

force brought about by remote controlled systems in that humans will not only be physically absent from the battlefield, but psychologically to some extent as well. If current trends continue, humans will be taken out of the immediate loop of the decision to release force against people.

Military technology often finds its way into law enforcement.[18] It is to be expected that there will be increasing pressures to use unmanned weapons systems in domestic policing. As discussed below, remote controlled systems are already widely available for use in law enforcement and the use of AWS in policing may well follow as part of the greater depersonalization of the use of force.

A brief note on terminology is appropriate before turning to substance. The terms used thus far have been "Lethal Autonomous Weapons Systems" (or LAWS),[19] "Lethal Autonomous Robots" (or LARs),[20] and "Killer Robots."[21]

These terms are appropriate when the main concern is the use of lethal force in the context of armed conflict, but they may not capture the essence of what the debate is about during law enforcement because, in such circumstances, it is likely that these weapon platforms will be fitted with less lethal weapons. It thus seems important to have a broader term available, one that will cover all autonomous uses of force against human beings, whether lethal or otherwise. After all, the same principled issues—for example, about the rights to bodily integrity and dignity—are raised whether the force used is lethal or not, and whether it is used in war or policing. If one context within which increasingly autonomous weapons are used (for example on the battlefield) is dealt with in isolation, the debate will have to be restarted when its use in other contexts (the use of lesser forms of force, for example, in law enforcement) comes to the fore.[22]

The underlying conceptualization of the problem at hand will also affect the forums where the issue is addressed. If one is dealing with "Lethal

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18. It is conceivable that if AWS were developed and made available to the military forces of a State, those military forces could be deployed in law enforcement operations using AWS. Once the advantages of autonomy in force delivery such as speed of decision-making become clear in one context, it is bound to be considered for use in other contexts that pose similar challenges.
19. *See* CCW Informal Meeting, *supra* note 1.
20. I used the term lethal autonomous robotics (LARs) in my May 2013 report to the HRC. See UN Press Release, *supra* note 1. Because it is now clear that autonomy may also find its way into law enforcement I think this terminology will unduly limit the discussion, and I no longer use it.
21. *See* Bonnie Docherty, Human Rights Watch (HRW) & International Human Rights Clinic, Losing Humanity: The Case against Killer Robots (2012), *available at* http://www.hrw.org/sites/default/files/reports/arms1112ForUpload_0_0.pdf [hereinafter Losing Humanity].
22. For example, I argue below that the governing principle will be whether there is "meaningful human control" over the release of any force against humans. It will be problematic if different terms or radically different meanings of terms are developed in these two contexts.

Autonomous Weapons Systems," it can easily be seen as an issue that is best left to disarmament structures, to the exclusion of the human rights bodies.[23] "Autonomous weapons systems" can more readily be dealt with not only by disarmament structures, but also by human rights structures as well.[24] As a result, I use the term "autonomous weapon systems" (AWS) as a generic term while recognizing that, in specific contexts, "Lethal Autonomous Weapons Systems" (LAWS) may also be appropriate.[25]

II. MACHINE AUTONOMY AND HUMAN AUTONOMY

An automatic system functions in a predictable way within a predictable environment. However, automatic functions are at the lower end of autonomy. As the level of autonomy increases, the system gains the ability to operate in and respond to an unpredictable environment. Such systems are unpredictable in the sense that it is impossible to foresee all of the potential situations that they will encounter during their programming. They may engage in probabilistic reasoning and, in some cases, learn from their "experience."[26]

To adapt and adopt a widely used definition, autonomous weapons systems can be understood to be robotic weapons systems that, once activated, can select and engage targets without further intervention by a human operator.[27]

The autonomy in question relates to the so-called critical functions of AWS—the release of force—and not to other functions such as navigation

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23. A number of states have argued in the Human Rights Council that the issue of autonomous weapons systems was beyond the mandate of the Council and belong in the disarmament fora. *See* http://www.ohchr.org/en/NewsEvents/Pages/DisplayNews.aspx?NewsID=13384&LangID=E.
24. For a call for the continued engagement of the Human Rights Council with the issue of AWS, alongside the role played by the CCW. *See* Human Rights Council, 25th Sess., Agenda Item 3, U.N. Doc HRC/26/36, *Report of the Special Rapporteur on Extrajudicial, Summary or Arbitrary Executions, Christof Heyns*, ¶ 145 (1 Apr. 2014) [hereinafter *Special Rapporteur Heyns April 2014 Report*].
25. An even more inclusive way to see the problem at hand is to describe it as the increased depersonalization of the use of force, through unmanned systems, remote controlled as well as AWS, in armed conflict as well as in law enforcement. However, such a broad framing will take the discussion beyond the scope of what can be covered here. *Report of the Special Rapporteur* Oct. 2014, *supra* note 1, ¶ 88 (calling for a study into the depersonalisation of the use of force in the law enforcement environment).
26. ICRC, *Report of the ICRC Expert Meeting on "Autonomous Weapon Systems*," 4,8, 9 (May 2014), *available at* http://www.icrc.org/eng/assets/files/2014/expert-meeting-autonomous-weapons-icrc-report-2014-05-09.pdf.
27. US Department of Defense Directive (DoD), Autonomy in Weapons Systems 13–15 (21 Nov. 2012), *available at* http://www.dtic.mil/whs/directives/corres/pdf/300009p.pdf; Losing Humanity, *supra* note 21, at 2. *See also* United Kingdom Ministry of Defence, The UK Approach to Unmanned Aircraft Systems, ¶ ¶ 202–03, *available at* https://www.gov.uk/government/publications/jdn–2-11-the-uk-approach-to-unmanned-aircraft-systems.

and maneuvering, which do not raise the same problems from a human rights point of view.[28] The release of force that is under scrutiny here is force used against humans, not against objects.

Autonomy is best seen as a continuum of increased machine independence in the broader process of decisionmaking about the use of force.[29] Thus, some AWS may have a limited level of autonomy and merely be automatic, whereas others may be much more independent from human decisionmaking, with full autonomy or the absence of meaningful human control at the top of the spectrum.[30]

Computers could simply suggest a target or a specific calibration of force to a human; on the next level it could select a target or level of force to be used but leave it to the human to engage; then it could do all of the above itself but provide the human with the opportunity to override it; or not leave such a possibility.

The term "meaningful human control" is widely used in discussions about the use of AWS in the context of armed conflict.[31] A loose, but perhaps helpful, interpretation of the term is that it refers to a situation where humans use AWS as tools to achieve their purposes in a way that leaves the human in the position of ultimate decisionmaking and responsibility. Human responsibility and meaningful human control are, in that sense, flip sides of the same coin. Where meaningful human control is absent, the AWS have "full autonomy."[32] It is argued below that the use of AWS in law enforcement would violate a range of human rights where there is full machine autonomy, but this is not necessarily the case where there is meaningful human control.

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28. Ronald C. Arkin Governing Lethal Behavior: Embedding Ethics in a Hybrid Deliberative/Reactive Robot Architecture (Technical Report GIT-GVU-07-11), at 56, *available at* http://www.cc.gatech.edu/ai/robot-lab/online-publications/formalizationv35.pdf; *See also* O.G. Clark, R. Kok & R. Lacroix, *Mind and Autonomy in Engineered Biosystems*, 12 Engineering Applications of Artificial Intelligence 389 (1999) *available at* http://www.sciencedirect.com/science/article/pii/S095219769900010X.The fact that the operation of AWS in a law enforcement environment may lead to more intensive surveillance of the population may of course result in far-reaching issues of privacy.
29. Nicholas Marsh, *Defining the Scope of Autonomy: Issues for the Campaign to Stop Killer Robots* 2 (2014), *available at* http://file.prio.no/Publication_files/Prio/Marsh%20(2014)%20-%20Defining%20the%20Scope%20of%20Autonomy,%20PRIO%20Policy%20Brief%202-2014.pdf; Michael Biontino, Summary of Technical Issues: CCW Expert Meeting on Lethal Autonomous Weapons Systems 1 (2014), *available at* http://www.unog.ch/80256EDD006B8954/%28httpAssets%29/6035B96DE2BE0C59C1257CDA00553F03/$file/Germany_LAWS_Technical_Summary_2014.pdf; Peter M. Asaro, *How Just Could a Robot War Be?* 2-3 (n.d.), *available at* http://peterasaro.org/writing/Asaro%20Just%20Robot%20War.pdf.
30. Asaro, *How Just Could a Robot War Be?, supra* note 29.
31. *See* http://www.article36.org/weapons-review/autonomous-weapons-meaningful-human-control-and-the-ccw/.
32. *See* Losing Humanity, *supra* note 21, at 7, 20.

AWS' complete independence from humans is not foreseeable. There will always be a human somewhere in the loop, exercising some level of control—if not in the immediate decisionmaking loop—then in the wider loop of those who program and decide where and when to use them. For example, humans in the wider loop will, in most cases, have the ability to override a machine gone wrong, or at least cause it to abort its mission and cease causing harm. The real question is not whether there are humans somewhere in or on the decisionmaking loop, but rather what level of control those humans exercise over the eventual release of force.

The main attraction behind the introduction of unmanned weapons systems (remote controlled or autonomous) in the context of armed conflict and potentially in law enforcement is that it keeps one's own forces out of harm's way. Increased autonomy for its part offers the additional advantage that computers can process vast amounts of information at a higher speed than is the case with remote control. Compared to computers, humans are slow at processing and responding to information.

Greater speed in processing information could provide a competitive advantage over an opponent in armed conflict, but speed could also be of the essence in law enforcement.

Hostage situations or suicide bombers present popular hypotheticals in which, with the aid of autonomy, better targeting may take place in the law enforcement context. For example, an AWS could conceivably be programmed, based on facial recognition, to release deadly force against a hostage-taker who is exposed for a split second, a situation in which a human sniper could be too slow to react, or in a complex situation where the human mind cannot process all of the information in good time.

One of the additional attractions of unmanned weapons systems, armed drones and robots alike, is that they relieve humans, to some extent, from having to do dull, dirty, and dangerous work, and as such can enhance the quality of life of humans and increase their autonomy to achieve other goals.[33] However, these benefits have to be weighed against the possible infringements of rights that their use may entail.

III. CURRENT AVAILABILITY OF UNMANNED SYSTEMS FOR LAW ENFORCEMENT PURPOSES

There is a burgeoning industry making unmanned weapons platforms manufactured specifically for domestic law enforcement available worldwide.

33. The same applies where remote controlled aerial and other vehicles are not armed or weaponized and are used merely for surveillance purposes, for example to monitor crowds, and the direct release of force is not in question. *See* http://www.fastcompany.com/3009827/dubai-debuts-drones-for-crowd-control. Privacy however remains an issue. ** this references relieving humans of the work but not about enhancing quality of life. Not good for making authors point.

While some of these systems are clearly able to use deadly force, many are branded "less lethal."[34] So far, these systems are remote controlled or, at most, automatic, but they are part of a larger trend toward greater depersonalization. AWS with higher levels of autonomy that are designed for law enforcement are not far beyond the horizon.

Possible areas where unmanned systems and potentially AWS may be used include not only hostage situations, but also crowd control; targeting specific classes of perpetrators such as prison escapees and big-game poachers; providing perimeter protection around buildings, such as high security prisons and border areas where stationary systems may be installed; or to patrol pipelines. Such systems may also be used in "wars" on drugs or other crime control or antiterrorism operations.[35]

For example, a South African company, Desert Wolf, is producing and selling a drone called Skunk Riot Control Copter which is "designed to control unruly crowds without endangering the lives of the protestors or the security staff."[36] The remote controlled drone has four high-capacity gun barrels, capable of shooting paintballs, pepper spray balls, and solid plastic balls.[37] The Skunk has already been purchased in and outside South Africa, with Turkey among the purchasing countries,[38] drawing criticism from the International Trade Union Confederation, among others.[39] Desert Wolf argues that its aim is to assist in preventing tragedies like the 2012

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34. *See* Carl Lundberg & Henrik I. Christensen, *Assessment of Man-Portable Robots for Law Enforcement Agencies* (n.d.), *available at* http://www.desert-wolf.com/dw/products/unmanned-aerial-systems/skunk-riot-control-copter.html.
35. *See* H.G. Nguyen & J.P. Bott, Robotics for Law Enforcement: Beyond Explosive Ordnance Disposal, International Symposium on Law Enforcement Technologies, Space and Naval Warfare Systems (2000), *available at* https://www.ncjrs.gov/pdffiles1/Digitization/190348NCJRS.pdf; Kylie Wightman & John Burkett, *SWAT and Law Enforcement Robots* (2014), *available at* http://prezi.com/mjqjpo66zvzc/swat-and-law-enforcement-robots/; Carl Lundberg & Henrik I. Christensen, *Assessment of Man-Portable Robots for Law Enforcement Agencies* (2014), *available at* http://www.hichristensen.net/hic-papers/Permis07-Lundberg.pdf.
36. *See* Lundberg & Christensen, *supra* note 34.
37. *See Riot Control Drone Armed with Paintballs and Pepper Spray Hits Market*, RT Question More, (21 June 2014), *available at* http://rt.com/news/167168-riot-control-pepper-spray-drone.
38. *See* Ajit Niranjan, *South African Mining Firm is the First to Purchase Riot Control Drone*, NewStatesman, 23 June 2014, *available at* http://www.newstatesman.com/sci-tech/2014/06/south-african-mining-firm-first-purchase-riot-control-drone; *Turkey Orders Sjunk Rito Control*, UAS Vision, 30 June 2014, *available at* http://www.uasvision.com/2014/06/30/turkey-orders-skunk-riot-control-uas.
39. *See Riot Control Drone Armed with Paintballs and Pepper Spray Hits Market* ,(21 Jun, 2014 4:00) *available at* http://rt.com/news/167168-riot-control-pepper-spray-drone. According to Tim Noonan, the spokesperson of the International Trade Union Confederation: "This is a deeply disturbing and repugnant development and we are convinced that any reasonable government will move quickly to stop the deployment of advanced battlefield technology on workers or indeed the public involved in legitimate protests and demonstrations."

shooting of mineworkers Marikane, by making less lethal weapons available and easier to use.[40]

Likewise, a United States company, Vanguard Defense Industries, has manufactured a drone called Shadowhawk which can be armed with grenade launchers or shotguns with laser designators and can be fitted with an XREP taser, delivering neuromuscular incapacitation to the person targeted.[41] Again it is remote controlled and is designed for use where there is high risk warrant, hostage rescue, domestic violence, and other similar threats.[42]

Also available are armored weapon platforms and launchers that can be manipulated from a distance to disperse demonstrators with teargas or rubber bullets, to inflict powerful electrical shocks, and to mark perceived troublemakers with paint.[43] Such weapon platforms may be equipped with firearms, light weapons, or tear gas. A German company has developed a fixed automatic tear gas system which releases doses of teargas if the perpetrator ignores a warning and further penetrates a restricted area.[44] Thus, a low level of autonomy in the force release is present.

Around the world, such technology is available to buyers with differing levels of technical capacity or experience in using such systems. This includes the internet, where the precondition for ownership is the ability to press the "Go" button and to make a cash transfer, and at exhibitions.[45] Private security firms—likely to be among clients—often have global operations.

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40. On 16 August 2012, thirty-four people employed by Lonmin platinum mines were killed at Marikana, South Africa after police opened fire on striking miners. *See supra* note 36. A Texas firm, Chaotic Moon Studios, has developed the Chaotic Unmanned Personal Intercept Drone that "can fire a dart packed with 80,000 volts at any unwanted intruder or criminal on the run." *See CUPID Drone to "Shock the World" With 80,000 Volt Stun gun* (10 Mar. 2014), *available at* http://rt.com/usa/drone-taser-gun-security-650/; Paul Joseph Watson, *Professor Warns of Robots Armed With Tasers*, Infowars.com, 28 Nov. 2013, *available at* http://www.infowars.com/professor-warns-of-robots-armed-with-tasers.
41. *See* Paul Joseph Watson, *Big Sis Gives Green Light For Drone That Tazes Suspects From Above*, Prisonplanet.com, 24 Aug. 2011, *available at* http://www.prisonplanet.com/big-sis-gives-green-light-for-drone-that-tazes-suspects-from-above.html.
42. *See* Vanguard Defense Industries Shadowhawk, http://www.uavglobal.com/shadowhawk.
43. Such systems have been developed mainly in US, UK, Jordan, Israel, and Spain. For example, the RiotBot is designed to be used for "riot control, civil order, jails and prisons, area denial, SWAT team operations, police round-ups, boundary defense and intervention, neutralization of suspects, dissuasive activities, control point security, surrounding unit rescues, interior inspections and securing, VIP protection and urban warfare" and can shoot 700 pepper balls per minute. *See* Riotbot Applications, http://www.technorobot.eu/en/riotbot.htm. Taser International produces long range electric shock stun projectiles, *see* Projectile Electric-Shock Weapons (Tasers), http://www.weaponslaw.org/weapons/projectile-electric-shock-weapons-tasers.
44. *See* Federal Ministry of Education and Research, http://www.securityresearchmap.de/index.php?lang=en&contentpos=4046; Rotoconcept Robotics, http://www.rotoconcept.com.
45. *See* Urban Shield, https://www.urbanshield.org/index.php/contacts/urban-shield-vendor-directory.

Their methods of operation and their equipment thus have the capacity to reach all corners of the earth.

The claim is often made that the weapons fitted to these unmanned systems are "less lethal," and therefore in line with the requirement of international human rights law that force used in law enforcement, if it is to be used at all, must be limited to what is required by the circumstances. The greater availability of less lethal weapons during the last couple of decades has no doubt, in many instances, reduced the casualty rate of law enforcement.[46]

"Less lethal" weapons, however, whether used on unmanned systems or in the hands of law enforcement officers, are not necessary nonlethal. At best, there is a smaller likelihood that these weapons will cause death, than would other weapons. All weapons can, depending on how they are used, cause death given how fragile humans are and, if less lethal weapons are used more frequently because it is easier to use—as may be the case with unmanned systems—or considered to be more legitimate, the resulting total death toll may still be higher. There have been recent instances recorded in which rubber coated metal bullets,[47] tear gas,[48] electric shock projectiles,[49] rubber ball projectiles,[50] and water cannons[51] have had deadly consequences.

Thus, the question arises, what will the human rights implications be if some of these systems are no longer just remote controlled, but take the next step and become autonomous?

IV. THE HUMAN RIGHTS THAT ARE POTENTIALLY AT STAKE

The human rights that may potentially be infringed upon if the increase in depersonalization of the use of force outlined above extends to the introduction of AWS in law enforcement most noticeably include the rights to bodily integrity and human dignity.

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46. *Report of the Special Rapporteur* Aug. 2014, U.N. Doc. A/69/265 *supra* note 1, ¶ 69.
47. *See, e.g.*, Press Release, Amnesty Int'l, Israel and Occupied Palestinian Territories: Trigger-Happy: Israeli Army and Police Use Excessive Force in the West Bank (27 Feb. 2014), *available at* https://www.amnesty.org/en/press-releases/2014/02/trigger-happy-israeli-army-and-police-use-reckless-force-west-bank/.
48. Holly G. Atkinson & Richard Sollom, Physicians for Human Rights, Weaponizing Tear Gas: Bahrain's Unprecedented use of Toxic Chemicals Agents Against Civilians (2012), *available at* http://physiciansforhumanrights.org/library/reports/weaponizing-tear-gas.html.
49. Amnesty Int'l, "Less than Lethal"? The use of Stun Weapons in US law Enforcement (2008), *available at* https://www.amnesty.ch/de/themen/weitere/taser/dok/2008/taser-bericht/Taser-Report-Less-than-lethal_USA.pdf.
50. Amnesty Int'l, Spain: The right to Protest Under Threat (2014), *available at* https://www.amnesty.org.uk/sites/default/files/spain_-the_right_to_protest_under_threat_0.pdf.
51. Human Rights Watch, *Turkey: A Weekend of Police Abuse* (18 June 2013), *available at* http://www.hrw.org/news/2013/06/18/turkey-weekend-police-abuse.

To simplify matters I refer, where possible, to the articulation of these rights in the International Covenant on Civil and Political Rights (ICCPR).

A. The Rights to Bodily Integrity

I understand the rights to bodily integrity to include the right to life; the right to security; and the right against cruel, inhuman, or degrading treatment. According to the International Covenant on Civil and Political Rights (ICCPR), "[e]very human being has the inherent right to life. This right shall be protected by law. No one shall be arbitrarily deprived of his life."[52] The term "arbitrary" has a legal as well as an ethical meaning.[53]

It is important for our purposes to note that the right to life has two components: (1) *preventing* the arbitrary loss of life and (2) *accountability* where that occurs. If the state or its agents cause an arbitrary loss of life (including by failing to exercise due diligence to prevent it) it commits a violation of the right to life; the lack of accountability where there is reason to believe that a death was unlawful, is in itself also a violation of the right to life.[54]

Article 9(1) of the ICCPR provides that: "Everyone has the right to liberty and security of person."[55] The right to security—including bodily security—covers the infliction of unwarranted life-threatening as well as non-life-

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52. International Covenant on Civil and Political Rights, *adopted* 16 Dec. 1966, G.A. Res. 2200 (XXI), U.N. GAOR, 21st Sess., art. 6 (1), U.N. Doc. A/6316 (1966), 999 U.N.T.S. 171 (*entered into force* 23 Mar. 1976) [hereinafter ICCPR].
53. *See* Thomas I. Cook, *Law, Arbitrariness and Ethics*, 30 Cal. L. Rev. 151 (1942), *available at* http://scholarship.law.berkeley.edu/cgi/viewcontent.cgi?article=3673&context=californialawreview. It could be argued that a determination of life and death by a machine is inherently arbitrary, based on the premise that it is an unspoken assumption of international human rights law that the decision to use lethal force must be reasonable and taken by a human. For example, law enforcement officials are described in the Code of Conduct, *supra* note 11, (commentary to Article 1) as all officers of the law "whether appointed or elected." Machines cannot be appointed or elected. Basic Principles on the Use of Force, *supra* note 13, Principle 10, provides that: "In the circumstances provided for under principle 9, law enforcement officials shall identify themselves as such and give a clear warning of their intent to use firearms." This arguably means that a face to face, potentially deliberative process is required under human rights law. "Arbitrary" is not merely the opposite of "inconsistent." Likewise it may be argued that machines cannot "reason" in the way that humans do and can thus not take "reasonable" decisions on their own.
54. Human Rights Committee, General Comment No. 31, *The Nature of the General Legal Obligation Imposed on States Parties to the Covenant, adopted* 29 Mar. 2004, ¶ ¶ 16, 18 *available at* http://www.umn.edu/humanarts/gencomm/hrcom31.html; UNHRC, General Comment No. 6 (1982), ¶ 4; UN 2005 Basic Principles and Guidelines on a Right to a Remedy and Reparation, McCann and others v. The United Kingdom, No. 18984/91, ¶ 169, ECtHR (1995).
55. ICCPR, *supra* note 52, art. 9 (1).

threatening injuries, as may happen during arrest or demonstrations.[56] Thus, "less lethal" force, or force that is not necessarily lethal, is also covered by this right. The right to security—like the right to life and other rights—may also be violated through a failure to ensure accountability where that happens.

While one might expect the nonlethal but nevertheless excessive use of force by law enforcement officers to be treated by the courts and others as a violation of the right to bodily security, it is, in practice, mostly labeled as a violation of the right against cruel, inhuman, or degrading treatment.[57] Article 7 of the ICCPR provides that: "[n]o one shall be subjected to torture or to cruel, inhuman or degrading treatment or punishment."[58]

A number of principles and rules about the use of force during law enforcement have been established over the years and the question in the current context is whether or not AWS will be able to operate within the confines of those rules.

Of central importance in this context are the United Nations Code of Conduct for Law Enforcement Officials ("Code of Conduct")[59] and the Basic Principles on the use of Force and Firearms by Law Enforcement Officials ("Basic Principles").[60] Law enforcement officials must uphold human rights as well as ethical considerations.[61] The central rules for the use of force under IHRL have titles similar to those used in IHL, but differ greatly in their content. The two main principles are necessity and proportionality.

"Necessity," in the context of human rights law, means that force should only be used as a last resort and, if force is needed, a graduated approach

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56. *Id.*
57. Nigel S. Rodley, The Treatment of Prisoners Under International Law 134 (1999).
58. Since machines are not humans, it can be argued that the application of force by a machine to a human being without direct human involvement and appropriate levels of control is inherently, or by definition, "inhuman" treatment. A system that allows animals—such as trained dogs—to be used against people where there is not strict control by humans is clearly inhuman. The same logic may be brought to bear on the use of AWS. See for example the England and Wales Model document on the use of dogs by police which provides that there is need for human rights considerations when deploying dogs, *available at* http://www.ndwa.co.uk/media/guidance-for-handling-dogs.pdf.
59. Adopted by General Assembly, Resolution 34/169 of 17 Dec. 1979.
60. Adopted by the Eighth United Nations Congress on the Prevention of Crime and the Treatment of Offenders, Havana, Cuba, 27 Aug. to 7 Sept. 1990. *See generally supra* note 24. According to the preamble, law enforcement officials "have a vital role in the protection of the right to life, liberty and security of the person, as guaranteed in the Universal Declaration of Human Rights and reaffirmed in the International Covenant on Civil and Political Rights."
61. *See* Basic Principles on the Use of Force, *supra* note 13, pmbl; Code of Conduct, *supra* note 11, at 1, providing that in developing rules and regulations on the use of force, governments shall "keep the ethical issues associated with the use of force and firearms constantly under review." *Id.* art. 2 of the Code of Conduct provides that: "In the performance of their duty, law enforcement officials shall respect and protect human dignity and maintain and uphold the human rights of all persons." *Id.* art. 5 prohibits amongst other things "inhuman . . . treatment."

should be followed. Necessity involves a factual test—is the force required to achieve the objective? Nonviolent means must be used under human rights law if possible; for example, trying to talk a person out of harming someone else. If possible, suspects should be captured and tried. [62] Robots are ill-suited to do any of this, including making the value judgments that are often required to determine how much force is needed.

Force may only be used against a person if that person is posing an imminent threat of violence—implying that a matter of seconds or even split-seconds will normally compose the window of time to make such a decision.[63] Such a threat can often only be ascertained by establishing someone's intent. It seems unlikely that machines will be able to ascertain whether a particular person has the intent to attack with sufficient certainty to warrant the release of force.[64] AWS may also not register facts about the person in question, such as a history of violence or mental state, to which humans may be better attuned, and which may call for a different approach. All of these considerations are irrelevant during armed conflict, and serve to emphasize that law enforcement is less suitable for autonomy than armed conflict.

Proportionality under human rights law determines that the interest harmed may not exceed the interest protected.[65] Proportionality, in essence, entails a value judgment—does the goal pursued justify the harm done? The fact that force may be "necessary" does not imply that it is proportionate, and force must be both necessary and proportionate. Thus, for example, a fleeing thief who poses no immediate danger may not be killed, even if it means the thief will escape, because the protection of property does not justify the intentional taking of life.[66] Intentional use of lethal force is only permissible where it is strictly necessary in response to a threat to life. [67] In law enforcement, the question has to be asked in each case whether the

62. *See* Shaking the Foundations, *supra* note 7, at 11.
63. *See Special Rapporteur Heyns April 2014 Report, supra* note 24.
64. Human Rights Watch notes that only humans can understand the intentions behind the actions of fellow humans. *See* Losing Humanity, *supra* note 21, at 4. Sassoli argues that in most cases even humans will never know the intention of another human being, "but instead will be receptive only to objective indications of the danger a person represents." *See* Sassoli, *supra* note 5.
65. Christof Heyns, *Autonomous Weapons Systems and Human Rights law* (16 May 2014), *available at* http://www.icla.up.ac.za/images/un/speeches/heyns%20ccw%20presentation%20aws%20and%20human%20rights.pdf.
66. *Id.* at 12, ¶ ¶ 72, 88.
67. Basic Principles on the Use of Force, *supra* note 13, Principle 9. Where police officers employ deadly force, they often justify their actions on the basis that they were attacked. This defense is not available insofar as the release of force by AWS (or other unmanned systems) is concerned. Intentional deadly force may be used only to protect human life, and not property such as a machine. On a different note: if unmanned systems are in use those opening fire on the police may claim that they were under the impression that they were firing on machines.

level of force used is not only the least harmful possible, but also whether the goal pursued justifies such force. Making such value calls requires human judgment, and robots are ill-equipped to do this.

If it is difficult to imagine that AWS will be able to meet the requirements of distinction, proportionality, and precaution posed by IHL; [68] it is much more difficult to see that they will be able to meet the more stringent requirements posed by IHRL for the protection of the right to life.

The rules of targeting under IHL are essentially aimed at protecting those who may not be legitimately targeted. Thus, the concern about the use of AWS in armed conflict is that the wrong people will be targeted or that force will not be calibrated to prevent excessive collateral damage. As a general rule, however, deadly force can be used against legitimate targets. [69]

In contrast, international human rights law does not know the term collateral damage.[70] As a general rule, the force used may affect only the person against whom it is used. Thus, targeting has to be much more precise under international human rights law than IHL. Moreover, the bodily integrity of the person against whom force is used is protected. Even if force is used legitimately against a particular person, it has to be calibrated to be both necessary and proportionate, requiring judgment that machines are not likely to be able to exercise.[71]

However, a further, significant element of the obligations of the state during law enforcement is absent from the above exposition. The discussion, so far, has dealt exclusively with the use of force. As outlined above, however, the relationships between the state and those against whom it may wish to use force differ greatly in armed conflict and law enforcement. Police have a positive duty of care to protect the public which does not exist in armed conflict, and this further weakens the case for the use of autonomous force release in law enforcement.

Law enforcement officials are required to respect, protect, promote and fulfill human rights.[72] Police officers may, for example, find themselves in a position during ongoing demonstrations where children or other bystand-

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68. *See* Steven Haines, *The Developing law of Weapons: Humanity, Distinction, and Precautions in Attack, in* The Oxford Handbook of International law in Armed Conflict 273 (Andrew Clapham & Paola Gaeta eds., 2014); Nils Melzer, *The Principle of Distinction Between Civilians and Combatants, in supra* at 296; Enzo Cannizzaro, *Proportionality in the law of Armed Conflict, in supra* at 332.
69. In some cases capture rather than kill may however be required during armed conflict, according to Ryan Goodman, *The Power to Kill or Capture Enemy Combatants*, 24 Eur. J. Int'l L. 819 (2013).
70. Only in the rarest of rare cases can the death or injury of bystanders be justified. Makaratzis v. Greece, No. 50385/99, ¶ 69, ECtHR 2004; Maiorano and Others v. Italy, No. 28634/06, ¶ 105, ECtHR 2009; Kaya v. Turkey, No. 22535/93, ¶ 86, ECtHR 2000.
71. *See* Losing Humanity, *supra* note 21, at 4, 32, 33–34.
72. General Comment No. 31, *supra* note 54, ¶ ¶ 2, 5.

ers are about to be trampled upon by protestors. Not trying to prevent this may be a violation of the police duty to protect life. It is hard to see how AWS (and unmanned systems in general) can fulfill this function leading to a violation of the rights to bodily integrity.

As mentioned above, a second element of the right to life is that there should be a proper system of accountability, and the same applies to the rights to bodily integrity. It is argued below that the use of AWS may cause an accountability vacuum if there is not a sufficient level of human control over force release because accountability is premised on control. To the extent that this is the case, the rights to bodily integrity will also be violated if there is not meaningful human control over the use of force.

Thus, there are serious challenges to the use of AWS in law enforcement in the sense that robots may not have the technical ability to use force or to protect life and bodily security in accordance with the requirements of IHRL, without meaningful human control. The rights to life and to bodily integrity in general raise the question *can they do it?* Can they target the right person and calibrate the amount of force in accordance with the requirements of proportionality and necessity? The answer to this question will require a technical assessment of each individual case and, as discussed below, there is a considerable burden of proof for those who want to make this difficult case.[73]

However, there is also the further question of whether machines *should* be given this power. This raises the question of whether the rights to bodily integrity do not require whatever force is used against a human being to be authored by a human being as opposed to a robot. For example, is it not inherently arbitrary for a machine to take decisions about life and death over human beings? The question whether machines should have such power also raises questions about the right to human dignity.

B. The Right to Human Dignity

The preamble of the Charter of the United Nations reaffirms "faith in fundamental human rights [and] in the dignity and worth of the human person."[74] Article 1 of the Universal Declaration of Human Rights provides that "[a]ll human beings are born free and equal in dignity and rights."[75] The International Covenant on Civil and Political Rights refers to dignity in its preamble

73. *See* Section V, *infra*.
74. For the somewhat quirky history of how the reference to human dignity came to be included in the Charter, *see* Charles R.Beitz, *Human Dignity in the Theory of Human Rights: Nothing but a Phrase?*, 41 Phil. & Pub. Aff. 259 (2013).
75. Universal Declaration of Human Rights, adopted 10 Dec. 1948, G.A. Res. 217A (III), U.N. GAOR, 3d Sess, art. 1, U.N. Doc. A/RES/3/217A (1948).

but does not list it as a substantive right in the rest of the text, though it is intertwined with other rights.[76]

The protection of human dignity is the common aim of international human rights law as well as IHL, and this commonality underlies their complementarity.[77] Dignity has been called the "mother"[78] of all human rights and is recognized to underlie much of IHL.[79] Is it inherently a violation of the right to dignity if the decision to use force against a human being is made by a computer as opposed to another human?

In order to assess the extent to which the use of AWS may impact dignity, the nature and contents of this right and indeed foundational principle of international law must be further assessed.

In spite of the frequent use of the term dignity in the human rights context, the status, exact scope and interpretation of this right are not without controversy.[80] It has been described as a "conversation stopper," because of the tendency of people to read their own preferences into it.[81] Dignity's exact content is often difficult to define. Some regard it as a placeholder

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76. *See* ICCPR, *supra* note 52, Pmbl, arts. 7, 9. The word dignity is also contained in the preamble of the International Covenant on Economic, Social and Cultural Rights, but not in the body (except in article 13). The right to dignity is not provided for separately in the main regional human rights conventions. Article 5 of the African Charter, *available at* http://www.achpr.org/instruments/achpr/#a5 uses the term but it is then linked to the right against cruel, inhuman, and degrading treatment. According to Article 1 of the EU Charter of Fundamental Rights "Human dignity is inviolable. It must be respected and protected." *available at* http://www.europarl.europa.eu/charter/pdf/text_en.pdf. Also see Explanations Relating to the Charter of Fundamental Rights, *available at* http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32007X1214(01) "The dignity of the human person is not only a fundamental right in itself but constitutes the real basis of fundamental rights."
77. See for example the view of the ICRC as expressed in Cordula Droege, *The Interplay Between International Humanitarian Law and International Human Rights law in Situations of Armed Conflict*, 40 Isr. L. Rev. 310 (2007), *available at* https://www.icrc.org/eng/resources/documents/article/other/ihl-human-rights-article-011207.htm. *See also* Paolo G. Carozza, *Human Dignity and Judicial Interpretation of Human Rights: A Reply*, 19 Eur. J. Int'l L. 931 (2008), *available at* http://ejil.oxfordjournals.org/content/19/5/931.full; Niels Petersen, *Human Dignity, International Protection*, *available at* http://opil.ouplaw.com/view/10.1093/law:epil/9780199231690/law-9780199231690-e809.
78. *See* Bernhard Schlink, *The Concept of Human Dignity: Current Usages, Future Discourses, in* Understanding Human Dignity 632 (Christopher McCrudden ed., 2013).
79. For example, see ICRC, Customary law Study, Rule 90, Torture and Cruel, Inhuman or Degrading Treatment *available at* https://www.icrc.org/customary-ihl/eng/docs/v1_rul_rule90; Geneva Conventions, Convention (III) Relative to the Treatment of Prisoners of War. Geneva, 12 Aug. 1949, Common Article 3 (1)(c); Protocol Additional to the Geneva Conventions of 12 Aug. 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), 8 June 1977, art. 75(2), pmbl.; Protocol Additional to the Geneva Conventions of 12 Aug. 1949, and relating to the Protection of Victims of Non-International Armed Conflicts (Protocol II), 8 June 1977, art. 4(2).
80. *See* Understanding Human Dignity, *supra* note 78, at 3.
81. Dieter Birnbacher, *Ambiguities in the Concept of Menschenwude*, *in* Sanctity of Life and Human Dignity 107 (Kurt Bayertz ed., 1996).

used by the drafters of the Universal Declaration when drafters could not agree on a foundation for human rights.[82]

However, dignity has, in a number of fora, been developed as a right on its own and has played a significant role in how various human rights are being interpreted, including the use of force and the right to life.

In some cases courts have, for example, ruled (and law makers have followed the same approach) that the death penalty (or at least aspects of its implementation) violates the right to life, the right to be free from inhuman treatment, and the right to dignity.[83] Imprisonment without the possibility of parole has, in some jurisdictions, been found to violate the right to dignity.[84] The foundational commitment of the human rights project to dignity plays an important guiding role in the area of human rights, and it would be important to consider how increased autonomy in the use of force tallies with human dignity.[85]

In the German Air Security case of 2006, the German Constitutional Court ruled that legislation allowing the Minister of Defence to authorize the shooting down of a civilian aircraft involved in a 9/11 style terrorist attack was unconstitutional, despite the lives that would potentially be saved, *inter alia* because that would constitute a violation of the right to dignity of those in the airplane.[86] Instead of reducing the issue to one of merely

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82. *See* Understanding Human Dignity, *supra* note 78, at 2.
83. *See, e.g.,* State v. Makwanyane and Another (CCT3/94) [1995] ZACC 3, 6 June 1995, ¶ 95. In Hall v. Florida 572 US (2014) ,at 22, dealing with disability and the death penalty, Justice Anthony Kennedy held that "Florida's law contravenes our Nation's commitment to dignity and its duty to teach human decency as the mark of a civilized world. The States are laboratories for experimentation, but those experiments may not deny the basic dignity the Constitution protects." *Id.* at 22.
84. State v. Tcoeib (SA 4/93) [1996] NASC 1, 6 Feb. 1996; German Federal Constitutional Court on life imprisonment, 45 BVerfGE 187, 21 June 1977.
85. UNGA, Int'l Law Commission (ILC), 66th Sess. Protection of Persons in the Event of Disasters, U.N. Doc. A/CN.4/L-831, art. 5 (15 May 2014), provides as follows: "In responding to disasters, States, competent intergovernmental organizations and relevant non-governmental organizations shall respect and protect the inherent dignity of the human person." *available at* http://www.ifrc.org/PageFiles/126924/A-CN.4-L.831.pdf. *See also* UNESCO, Universal Declaration of Bioethics and Human Rights, arts. 3, 5 (19 Oct. 2005), provides under the heading of "Human dignity and human rights": "1. Human dignity, human rights and fundamental freedoms are to be fully respected. 2. The interests and welfare of the individual should have priority over the sole interest of science or society." Article 5, on "Autonomy and individual responsibility," reads as follows: "The autonomy of persons to make decisions, while taking responsibility for those decisions and respecting the autonomy of others, is to be respected." *available at* http://portal.unesco.org/en/ev.php-URL_ID=31058&URL_DO=DO_TOPIC&URL_SECTION=201.html.
86. German Federal Constitutional Court case on legislation authorizing the shooting down of an aeroplane, 1 BvR 357/05, 15 Feb. 2006.

> Also the assessment that the persons who are on board a plane that is intended to be used against other people's lives . . . are doomed anyway cannot remove its nature of an infringement of their right to dignity from the killing of innocent people in a situation that is desperate for them which an operation performed pursuant to this provisions as a general rule involves. Human life and human dignity enjoy the same constitutional protection regardless of the duration of the physical existence of the individual human being.

counting the numbers of lives affected under the different scenarios, the court ruled that such a system would, in principle, constitute a violation of the right to dignity.

There are different conceptions of dignity. For example, it has a religious connotation for some and is tied up with the belief that humans are created in the image of God (*imago Dei*);[87] others rely on the Kantian notion that each person should be treated as an end and not as a means.[88] Dignity can also be seen as related to the capacity of someone to be a moral person and as moral responsibility.[89] Violations of dignity often take the form of physical infringements of the person, but it is not confined to that—not being able to act out one's moral choices could be another form of indignity.

Underlying the concept of dignity is a strong emphasis on the idea of the infinite or incommensurable value of each person.[90] The Kantian concept of dignity assigns this value to each person as a separate and unique, or irreplaceable, individual. Acts of indignity involve an unwarranted reduction of this worth. Each person has an inner core that may not be infringed upon, even if such infringement would be beneficial to the common good because that would mean they are used as a tool. Individual dignity cannot be accounted for properly within schemes of instrumental rationality, where competing claims are measured against each other based on their assigned weights, because each human being is considered to be of infinite value.[91]

Exactly whose dignity is potentially at stake? In the first place, I would submit, the concern should be about the dignity of those at the receiving end of the force used: those targeted as well as those caught in the crossfire.[92] Secondly, the dignity of those in whose name force is used may also be at stake. The effect of AWS on the dignity of these two different categories will now be considered in turn.

How does the use of AWS impact the dignity of those subjected to the use of force? It has been argued that to have the decision whether one

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87. Janet Soskice, *Human Dignity and the Image of God, in* Understanding Human Dignity, *supra* note 78, at 229.
88. David Hollenbach, *Human Dignity: Experience and History, Practical Reason and Faith, in* Understanding Human Dignity, *supra* note 78, at 123.
89. *See* Ronald Dworkin Justice for Hedgehogs 203, 204 (2011).
90. Rebecca J. Scott, *Dignite/Dignidade: Organising Against Threats to Dignity in Societies After Slavery, i*n Understanding Human Dignity, *supra* note 78, at 69.
91. The idealistic nature of the concept cannot be denied. Dignity has been described as playing among other things the role of a "*Sehnsuchtsbegriff,* a concept that encompasses our longing for a better and fairer world." *See* Bernard Schlink, *The Concept of Human Dignity: Current Usages, Future Discourses, in* Understanding Human Dignity, *supra* note 78, at 634.
92. The, at times, exclusive emphasis in much of civil society activism about AWS on civilian casualties and their right to life in the context of armed conflict could be seen as addressing only one aspect of the problem—dignity, including the dignity of the person targeted, should also be covered. *See, e.g.*, Losing Humanity, *supra* note 21.

lives or dies being made by machines is the ultimate indignity and similar arguments can be made about other forms of force, especially if they are potentially lethal or can seriously maim. [93] A machine, bloodless and without morality or mortality, cannot fathom the significance of using force against a human being and cannot do justice to the gravity of the decision.[94] Each instance where force is used against a human being requires that another human being should decide afresh whether to cross that threshold.

The heuristic argumentation used by computers fails to capture and do justice the complexity and fullness of human life and decisions about life. Robots cannot be preprogrammed to respond in an appropriate way to the infinite number of scenarios that real life—and real people—offer.[95] Death by algorithm means that people are treated simply as targets and not as complete and unique human beings, who may, by virtue of that status, meet a different fate. They are placed in a position where an appeal to the humanity of the person on the other side is not possible.

Some have argued that people in such situations are treated like pests or objects, as a nuisance that must be gotten rid of, rather than as someone with inherent dignity.[96] When someone comes into the sights of a computer, that person is literally reduced to numbers: the zeros and the ones of bits.

The interrelated considerations of time and hope play a role in this context. One of the problems presented by computer algorithms that determine when AWS will be allowed to release force is that they do so in advance, on the basis of hypotheticals, while there is no true and pressing emergency rendering such a far-reaching decision unavoidable. Even if it may be permissible in a real emergency to take far-reaching measures, it does not follow that such decisions can be taken in the abstract.

Decisionmaking by politicians and scientists about the life and limb of people based on theoretical possibilities contemplated in the halls of the legislature or laboratories risks trivializing the issues at stake. Hypotheticals such as the ticking-bomb scenario present the same kind of problem. It makes crossing the threshold of using force against another human being too easy. The statute authorizing the shooting down of the plane, struck down in the German Air Security case cited above, had a similar quality—it authorized in advance, in the abstract, the ending of the lives of imaginary passengers.

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93. Maj Gen (ret) RH. Latiff & P McCloskey, *With Drone Warfare, America Approaches the Robo-Rubicon*, Wall St. J., 14 Mar. 2013 at 3.
94. Asaro, *On Banning Autonomous Weapon Systems*, *supra* note 5, at 688, 693–704.
95. *See* Shaking the Foundations, *supra* note 7, at 2.
96. Robert Sparrow, *Robotic Weapons and the Future of war, in* New Wars and New Soldiers: Military Ethics in the Contemporary World 125 (Paolo Tripodi & Jessica Wolfendale eds., 2011).

This seems to fly in the face of the requirement that the use of force against a human being should be a measure of last resort.[97]

Hope, often against the odds, is an important part of our psychological makeup and dealing with the harshness of reality.[98] A sentence of life without parole, for example, like the death penalty, can be seen as a violation of dignity because it means "writing off" the person, not leaving open the possibility of hope. The possibility of a deliberative process somewhere down the line, where a change of mind and fate is possible, is ruled out in advance by the introduction of AWS if human control is sacrificed in the process

A world in which death comes with the certainty of science, with no prospect, however farfetched, of a last minute change of plan, or the possibly of human compassion—what may be called humanitarian override—offers little room for hope. Hope in this sense—and thus dignity—may be one of the casualties of AWS.

An important question here is how much autonomy the humans and the machines respectively have. If computer input enhances targeting and calibration of force, but the computer operates at such a low level of autonomy that the humans are still in control, dignity is probably not under threat. The machine remains a tool in the hands of the humans who use it to enhance their own autonomy. The decision to use force is not taken by an anonymous entity, but by a human who can—at least in principle, though of course not always in practice—respond to the person targeted in a humane way.

However, the situation is quite different if the decision to use force is, for all practical purposes, taken over by autonomous computers and they are no longer tools in the hands of humans.

It is worth contemplating the likely reaction of people being targeted by AWS to test the applicability of the rather theoretical exposition given above. For example: as indicated above, riot control robots are being developed specifically to control unrest at mines. One can imagine the likely reaction of miners if they are being herded like animals and prodded or shot at by remote controlled helicopters. Such indignity may further increase if they find they are being herded by autonomous robots, adding insult to injury.

In short, it is my contention that the use of fully autonomous weapons systems violates the right to dignity of those against whom the force is used.

So far I have discussed the effect of AWS on the dignity of those against whom it is used. What about the dignity of those on whose behalf it is used?

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97. This is not to say that decision-makers who may have to use force in real-life situations should be left with an unfettered discretion on whether to use such force and how much force may be used. The law should pose certain parameters, such as necessity and proportionality. However, these are and should remain general principles, not *a priori* determinations of how such principles should be applied in concrete cases.
98. *See* Tali Sharot, The Optimism Bias: A Tour of the Irrationally Positive Brain (2011).

Where decisions concerning the use of force against other people are taken out of one's hands, one's own dignity and the ability to assume responsibility for the actions—to be a moral person—could be compromised. The justification of human rights is often described as the ability to act purposefully. Where machines take some of the most far reaching decisions that can be made on one's behalf, one can no longer act purposefully.

C. Just Administrative Action

Legal systems around the world recognize the right to just administrative action. Can a computer "apply its mind" when it activates the release of force to meet this requirement? [99]

It appears to be a hidden assumption of administrative law that humans will make at least the most important decisions. Because the use of force by a law enforcement official is often irreversible, and ordinary appeal procedures do not provide protection, the person affected must be able to appeal to the humanity of the person exercising the executive power. Full machine autonomy excludes this.

While there is an emerging school of thought that the use of force in an armed conflict is an administrative act that requires the exercise of human discretion, the right to just administrative action outside such a setting is well established.[100] The use of force by the authorities invariably has more far-reaching consequences for the people affected than other forms of administrative action.

It should be noted that, in response to the emergence of technology, some states are adopting laws to limit the computerization of executive power in all its forms. For example, one of the European Union Directives provides that every person has a right "not to be subject to a decision which produces legal effects concerning him . . . which is based solely on automated processing of data."[101] This should apply all the more to the use of force.

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99. Eliav Lieblich and Eyal Benvenisti have given a perspective on AWS from an administrative law point of view. They argue that AWS raises "a problem of pre-bound executive discretion." In their view, proper understanding of "administrative discretion" requires "any administrative authority [to] consider, within the confines of its legal authority, each decision to exercise power in light of the specific rights and interests affected in the case at hand." Administrative action demands a constant exercise of discretion and 'active, on-going intention not to inflict harm on civilians and "imposes, in turn, limits on the ability to bind such discretion in advance." *See* Eliav Lieblich & Eyal Benvenisti, *An Administrative Law Approach to the Problem of Autonomous Weapons Systems* (2014), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2479808&download=yes.
100. *Id.*
101. EU Directive 95/46/EC Directive 95/46/EC of the European Parliament and of the Council of 24 Oct. 1995 on the Protection of Individuals With Regard to the Processing of Personal Data and on the Free Movement of Such Data, art. 15.

D. Accountability and the Right to a Remedy

The ICCPR provides that state parties must "ensure that any person whose right or freedoms . . . are violated shall have an effective remedy."[102]

It is clear that, whether humans or machines control force, there will be instances in which the wrong person is targeted or excessive force is used. Elaborate systems have developed over many years to hold humans who control the use of force accountable in the event that something goes wrong. However, as many commentators have pointed out in the context of armed conflict, it is uncertain who will be held accountable when the use of force by an autonomous system would have been illegal if a human being was directly involved.[103] This raises the prospect of an accountability vacuum. The same consideration applies, probably to a greater degree, to the use of AWS in the law enforcement context where there is a much higher level of accountability.[104]

The prospect of an accountability vacuum again highlights the importance of the presence of a meaningful level of human control over the use of force in all its forms. Responsibility follows control, and without meaningful human control there cannot be meaningful accountability. Meaningful human control can, in many ways, be seen as the level of control that will allow accountability to be assigned in a coherent way.

It is possible that impersonal institutions such as states or corporations will be held accountable and have to pay compensation or change their practices. However, to the extent that humans, for all practical purposes, play a secondary role in the decisionmaking as machine autonomy increases, it will be difficult to hold them accountable because of their lack of control.

It was said above that an absence of accountability constitutes a violation of the right to life and other rights. To the extent that AWS may create an accountability vacuum, its use may thus result a violation of the rights listed above, including the right to life.

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102. ICCPR, *supra* note 52, art. 2 (3).

103. Perri 6, *Ethics, Regulation and the new Artificial Intelligence, Part II: Autonomy and Liability*, 4 Information, Comm. & Soc'y 406 (2001); Kenneth Einar Himma, *Artificial Agency, Consciousness, and the Criteria for Moral Agency: What Properties Must an Artificial Agent Have to be a Moral Agent?*, 7th International Computer Ethics Conference (2007); Robert Sparrow, *Killer Robots*, 24 J. Applied Phil. 1 (2007).

104. To the above should be added the importance of transparency. UNGA, Human Rights Council

14th Sess., Agenda item 3, Report of the Special Rapporteur on Extrajudicial, Summary or Arbitrary Executions, Philip Alston, U.N. Doc. A/HRC/14/24/Add.6, at 26, ¶ ¶ 87–92 (28 May 2010); UNGA, 68th Sess., Extrajudicial, Summary or Arbitrary Executions, U.N. Doc. A/68/382 ¶ ¶ 95–101 (13 Sept. 2013); UNGA, 68th Sesss, Promotion and Protection of Human Rights and Fundamental Freedoms While Countering Terrorism, U.N. Doc. A/68/389, at 11–14 (18 Sept. 2013).

V. LIMITATIONS ON RIGHTS, AND THE BURDEN OF PROOF

Most human rights may, in principle, be limited. However, any infringement should present as little intrusion as possible. Those who infringe rights must show that the infringement was for a legitimate reason and was as proportionate to that goal.[105] If a state uses weapons systems that *prima facie* limit rights such as those listed above, the onus to show that it is justified under human rights law is thus clearly on the state. In particular, if the level of autonomy of the weapon release system infringes the rights in question, the onus falls on the state in question to show why a human being is not employed to make those decisions.

The fact that the onus lies on those who are potentially violating rights may have far-reaching consequences. If there is doubt, for example, as to whether humans retain sufficient levels of control over the release of force not to implicate human dignity, such use of force should not be permissible.

It is worth making reference here to the approach that is followed in international environmental law. The precautionary principle determines that, in the absence of scientific consensus on whether harm will be caused by an action or policy, the onus is on those wishing to introduce the action or policy to demonstrate that harm will not be caused.[106]

VI. THE TEST: ARE AWS "GOOD TOOLS"?

In my view, AWS can only be accepted to the extent that it is clear that they are *good tools*: they must be *tools*, in that they are under the meaningful control of human beings, and they must be *good* tools, in the sense that they allow their users to outperform human beings who do not use those tools.

A. The First Hurdle: Humans Must Retain "Meaningful Human Control"

It appears, from the above, that each one of the rights discussed may be violated by the use of AWS if there is not meaningful human control—if the machines are not tools. In full autonomous mode, machines are unlikely to have the ability to make the judgment calls necessary to target only those who present an immediate threat to life, and use graduated force in the

105. Handyside v. the United Kingdom, No. 5493/72, 7 Dec. 1976, ¶ 48; R v. Oakes [1986] 1 S.C.R. 103.

106. Mary Stevens, *The Precautionary Principle in the International Arena*, 2 Sustainable Dev. L. & Pol'y 13 (2002), *available at* http://digitalcommons.wcl.american.edu/cgi/viewcontent.cgi?article=1278&context=sdlp.

process. The same arguments can be made about the other rights related to bodily integrity. Meaningful human control is a precondition for the right to dignity to be met and the same applies to freedom from inhuman treatment, just administrative action, and for there not to be an accountability vacuum. Thus, meaningful human control is a requirement for the use of AWS to be in conformity with international human rights law.

Based on the above grounds, fully autonomous weapons systems should not be used in law enforcement. But is there room for lesser forms of autonomy in force delivery?

It is tempting to see the debate about AWS as a part of a giant turf war about control over the world: machine autonomy is pitted against human autonomy. It is a zero sum game: the more ground one gains, the more the other loses.

And, yet, the idea of a zero sum game between humans and machines may not present the full picture in all cases. Low levels of machine autonomy may, in fact, enhance the autonomy of humans by enabling them to achieve goals such as more accurate targeting and calibration of force. The problem comes in when the machine no longer serves as a tool to humans.

How are the situations where machines are the tools, or the masters, of humans to be distinguished from each other? It appears from the above that human rights are generally violated when there is no "meaningful human control" over decisions to use force. While the exact content of the notion of meaningful human control still needs to be established, it seems to provide a valuable starting point to draw the distinction between acceptable and unacceptable machine autonomy.

What is meant by meaningful human control? This subject is frequently discussed in the context of IHL and the discussion should provide a reference point for interpreting this notion in the context of law enforcement.[107] Some provisional comments can be made. Exercising meaningful control is not the same as exercising "final control." The mere fact that a computer and not a human eventually releases the force, even where deadly force is at stake, does not necessarily mean that humans do not exercise meaningful control. The question is whether humans have the real control over the release of force, wherever they are located in the chain of decisionmaking.

To illustrate this point, consider the following hostage-taking scenario: a large group of hostages have been taken and their lives are at immediate risk.[108] After all other avenues have proven fruitless, a group of snipers are

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107. It seems clear that there will be differences between the way in which the term meaningful human control is applied in situations of armed conflict and law enforcement.
108. *See* Aminu Abubakar, *As Many as 200 Girls Abducted by Boko Haram, Nigerian Officials say*, CNN, 16 Apr. 2014, *available at* http://edition.cnn.com/2014/04/15/world/africa/nigeria-girls-abducted. The example provided here is not a case where the delivery system is unmanned, but some level of autonomy in force delivery is present.

deployed to target the hostage takers. Because multiple, moving targets are concerned, it is difficult to get the snipers to fire at the same time, and it is dangerous if they don't. A central computer is brought into the decisionmaking loop to control the simultaneous release of force at a time when all of them have a clear shot. Once the computer establishes that all the snipers have a clear shot, it releases force. [109]

I would argue that there is a sufficiently high level of human control over the targeting decision in the above scenario to describe this as an instance of the exercise of meaningful human control. The decision of who will be targeted, and the actual decision that force will be released in the specific case is taken by humans—it is simply the release of the force that is delayed until it is safe to do so. This is an example of a case in which the involvement of the computer enhances, rather than diminishes, the autonomy of the humans involved.

Thus, meaningful human control requires not merely that humans decide that force will be used: meaningful human control is present when humans determine clear parameters about *how* (where and when and against whom) it will be used, even if they do not determine all of the details.

Focusing on the level of human control entails that the determining factor is not the level of machine autonomy (it is only one of many considerations); rather, the starting point is the level of human decision making and responsibility.

A carefully worked-out notion of meaningful human control can play different roles: its most general role will be to provide an overall conceptual and ethical guideline. Additionally, it can inform policy and serve as a basis for legal guidelines—hard law or soft law—on the use of AWS, or as a basis for a prohibition on certain weapons. However, it is submitted, that, in determining whether human rights have been violated, proving that human beings exercise meaningful control is only the first hurdle that a state wanting to use AWS will have to cross.

B. The Second Hurdle: Machines Must Outperform Humans

Assume that there is meaningful human control over the release of force but there is some level of machine autonomy in the targeting chain. Will it

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109. This is an elaborate version of so-called automated rifle scoping, where a computer decides when to release fire against a human selected target in the case of a single rifle. The computer increases the first shot success probability—and thus diminishes the chances of bystanders being hit—by releasing fire only when a trajectory has been found that compensates for the effect of gravity, wind, humidity, incline, temperature etc. *See Long Shot: Inside the Scope of Smart Weapons,* Motherboard, 23 Sept. 2013, *available at* http://motherboard.vice.com/blog/long-shot-inside-the-scope-of-smart-weapons.

be sufficient if the outcome of using such AWS matches the performance of humans acting without such technology?[110] Or will their outcomes need to be better even though they cannot be expected to be perfect? [111] What is the benchmark?

It seems clear that we hold technology to which we entrust human life in general to a higher standard, and that a mishap involving machine autonomy is more likely to elicit public outrage than pure human error. To the extent that technology indeed offers the better control over the targeting of force, higher standards of performance can be expected from its use. Certainly, the experience with armed drones seems to suggest that there is a strong global reaction to depersonalized force.[112] It appears likely, and justified, that lawmakers will impose a higher—and probably a significantly higher—standard, especially where higher levels of autonomy are at stake. In essence, I argue that there is a sliding scale: the more control technology provides, the more exacting the standards of accountability should be. Where meaningful human control is lost, the basis for accountability and, as a result, the grounds on which such weapons system may be allowed, cease to exist.

VII. CONCLUSION

Fully autonomous weapons have no role to play in law enforcement and there is an even stronger case that they should be banned within the armed conflict context. AWS which allow meaningful human control may be used but, insofar as they enhance human control over targeting by those who use them, should be held to a higher standard in terms of meeting the requirements of necessity and proportionality.

Even if it is possible to conceive of situations where fully autonomous weapons could make better targeting decisions and save lives or prevent injuries, they should not be allowed because they may violate the right to dignity as well as the rights to bodily integrity if machines get the power

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110. Patrick Lin, George Bekey, Keith Abney, *Robots in War: Issues of Risk and Ethics, in* Ethics and Robotics (Rafael Capurro & Michael Nagenborg eds., 2009) 50. *See also* Sassoli, *supra* note 5.
111. Asaro, *Robots and Responsibility, supra* note 5, at 16.
112. Death by armed drones is arguably more closely monitored by civil society and by international bodies than other uses of force that cause similar numbers of fatalities. See for example www.thebureauinvestigates.com/. Moreover, the level of direct political involvement in individual killings is also higher than in other cases. *See* Jo Becker & Scott Shane, *Secret "Kill List" Proves a Test of Obama's Principles and Will*, N.Y. Times, 29 May 2012, *available at* http://www.nytimes.com/2012/05/29/world/obamas-leadership-in-war-on-al-qaeda.html?pagewanted=all&_r=0.

to use force against human beings. Accountability is one component of the protection of the right to life and the other rights discussed above. If it is true that full machine autonomy precludes proper accountability, as is argued above, using fully autonomous weapons will preclude fulfilling those aspects of the rights concerned.

It should also be kept in mind that the answer to the question of whether particular weapons should be banned does not merely depend on whether they can within a limited range of conceivable circumstances and will be used in conformity with the applicable legal regime, be it under international human rights law or IHL. Many of the weapons that are banned today can, in fact, be used in a closely controlled environment in ways that comply with the law. At some point, a practical decision needs to be made whether the weapon in question poses an unacceptably high risk of not being used in such a way.

The use of unmanned systems during law enforcement in general should remain under close scrutiny if policing is to remain the humane activity that it should be. For those who wish to use increased levels of autonomy in law enforcement, there will be a heavy burden of proof to show that it complies with all the rights in question. The mere fact that they may result in fewer deaths or injuries in the long run, if used under certain circumstances, does not mean they should be allowed; the question is also whether such use is compatible with the idea of dignified life and compliance with the other rights discussed.

The question whether and, if so, to what extent humans can and do exercise control over their fate has occupied human thinking over many years. Science and technology are tools to enhance the power of humans to take greater control over their world. If humans, for all practical purposes, delegate the determination of who will live and who will die to machines, the emancipatory objective of science will be turned on its head. It also places dignity and the human ability to take purposive decisions at risk—the very notions which give life its meaning in the first place, and technology the reason for its existence.