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Complications of a Common Language: Why it is so Hard to Talk about Autonomous Weapons

Merel A.C. Ekelhof*

Abstract

In the past years, a growing number of voices are calling for urgent discussion on weapon systems with increasing autonomy. The discourse on these emerging technologies takes place at the political level under the auspices of the Convention on Certain Conventional Weapons (CCW) but the issue is also widely reflected upon in academic articles, conference papers, (governmental) reports and other papers. As the issue of autonomous weapons is multifaceted and multidisciplinary, the community involved in the discourse is too. What all of these actors have in common, however, is that they are all part of a discourse within which semantic disputes are prominent. Although different terms are suggested to describe autonomous weapons, a number of terms stand out. Particularly prominent terms are 'autonomy', 'target selection and attack' and 'human intervention'. These terms are the basis of a widely used and broadly accepted definition describing autonomous weapons as weapons that are capable of selecting and attacking targets without human intervention. At first glance, the definition and language seem quite clear; nevertheless, upon further examination this definition reveals a number of complications. The aim of this paper however is not to propose a definition that would solve linguistic disputes (if such a definition would even be viable); rather it takes a more external perspective with the purpose to illustrate how a common vocabulary can complicate the discourse on autonomous weapons when the terms involved are not commonly understood or lack consistent interpretations. Hence, this article functions as a map for understanding the debate on autonomous weapons–imperative for anyone who would decide to participate in it.

1. Introduction

Over the past decades, autonomy has been increasing in a wide range of military systems. The first rudimentary signs of military autonomy date back to the First

* PhD candidate, Faculty of Law, VU University Amsterdam; Research Fellow, Centre for the Politics of Transnational Law. E-mail: m.a.c.ekelhof@vu.nl. I am very grateful to Wouter Werner and Tanja Aalberts for their comments on earlier drafts. This research is supported by the Netherlands Ministries of Defense and Foreign Affairs. The views expressed herein are those of the author and should not be taken as the position of either the Netherlands Ministry of Foreign Affairs or the Ministry of Defense.

World War, during which the so-called 'Kettering Bug' was developed—a tiny airplane that was guided by preset controls and had detachable wings that were released when over the target, allowing the fuselage to plunge to the ground as a bomb.[1] By today's standards, this type of weapon is considered very primitive, but, as technological developments continued, autonomous capabilities for military systems advanced and attained vital roles in modern military arsenals. Examples of such systems are the Israeli Guardium, a semi-autonomous unmanned ground system 'designed to perform routine missions, such as programmed patrols along border routes, but also to autonomously react to unscheduled events, in line with a set of guidelines specifically programmed for the site characteristics and security doctrine',[2] and Close-In Weapon Systems, such as the US Phalanx, or defensive ground systems, such as the surface-to-air missile battery Patriot, which can autonomously perform their own search, detect, evaluation, track, engage and kill assessment functions to defend ships or particular areas against fast moving and highly maneuverable threats. Drones are not autonomous—they are remotely piloted aerial vehicles—but they can have autonomous capabilities, such as autonomous take-off and landing, navigation, fly,[3] or even mid-flight refueling, evasive maneuvers and target identification.[4] This trend in autonomy in weapon systems has not gone unnoticed. In the past years, a growing number of voices are calling for urgent discussion on weapon systems with increasing autonomy. In April 2013, activists gathered to call for a pre-emptive and comprehensive ban on fully autonomous weapons or, as they call them, 'Killer Robots'. Scientists from a wide range of disciplines are hotly debating the issue in articles, seminars, workshops and conferences. Concurrently, media stories highlight all types of views, including doomsday scenarios where super-smart killer robots wipe out the human race. Autonomous weapons have

[1] Although the Kettering Bug was a significant development, the war ended before it could be used in combat. Paul Fahlstrom and Thomas Gleason, *Introduction to UAV Systems* (4th edn, John Wiley & Sons 2012).

[2] GNIUS, 'Guardium UGV' <http://g-nius.co.il/pdf/brochures/GuardiumUGV.pdf> accessed 6 May 2016.

[3] One of the first drones with significant autonomous features was the Global Hawk, developed by Northrop Grumman through a program initiated by DARPA. Once mission parameters are programmed into the Global Hawk, the aerial system can autonomously taxi, take off, fly, remain on station capturing imagery, return and land. Northrop Grumman, 'Factsheet RQ-4 Global Hawk' <www.northropgrumman.com/capabilities/rq4block20globalhawk/documents/hale_factsheet.pdf> accessed 6 May 2016.

[4] Currently, a number of states are developing unmanned combat air vehicles (UCAV) with these autonomous capabilities. Prototypes are the British TARANIS and the American X-47B; the Russians and Chinese are developing similar stealth drones called the MiG Skat and the Anjian (Dark Sword) and European companies are developing a prototype called nEUROn. John Reed, 'Meet Skat, Russia's stealthy drone' (2013) Foreign Policy <http://foreignpolicy.com/2013/06/03/meet-skat-russias-stealthy-drone/> accessed 6 May 2016.

been described as the third revolution in warfare, after gunpowder and nuclear arms.[5] Hence, debates about these weapons intensified quickly.

The debate on autonomous weapons focuses primarily on the ability of a weapon system to independently *select* and *attack* targets *without human intervention*. Hence, it does not revolve around some aforementioned functions of autonomous navigation, take-off and landing, or even fly (these are less controversial or even considered generally acceptable).[6] Rather, it focuses on critical functions that determine which target will be selected and the actual attack function that results in the use of force. According to proponents, autonomous weapons would generate many benefits. Some of the key advantages of autonomy would be faster data collection and processing, force protection and risk reduction for own troops, access to communication denied and hostile environments, cost-reduction, and increased persistence, endurance and precision.[7] On the contrary, opponents claim that autonomous weapons should be restricted or banned because, primarily, they would violate fundamental principles of international humanitarian law (eg the principle of distinction and the principle of proportionality)[8] and it would be inherently unethical to delegate the decision to kill to a machine.[9] They fear that humans will no longer control technology, but rather that the technology will control humans. On the one hand, it is often

[5] Future of Life Institute, 'Autonomous Weapons: an Open Letter from AI & Robotics Researchers' (*FLI*, 2015) <http://futureoflife.org/AI/open_letter_autonomous_weapons> accessed 6 May 2016.

[6] United Nations Institute for Disarmament Research, 'Framing Discussions on the Weaponization of Increasingly Autonomous Technologies' (No 1, 2014) <www.unidir.org/files/publications/pdfs/framing-discussions-on-the-weaponization-of-increasingly-autonomous-technologies-en-606.pdf> accessed 6 June 2016, 3.

[7] For a more elaborate explanation on military value, see the US Defense Science Board Summer Study on Autonomy. US Defense Science Board, 'Summer Study on Autonomy' (DSB 2016) <www.hsdl.org/?view&did=794641>.

[8] Articles that specifically discuss the issue of permissibility under IHL are: Chantal Grut, 'The Challenge of Autonomous Lethal Robotics to International Humanitarian Law' (2013) 18 JCSL 1, 23. Kenneth Anderson, Daniel Reisner and Matthew C Waxman, 'Adapting the Law of Armed Conflict to Autonomous Weapon Systems' (2014) 90 International Legal Studies 386, 411. Michael N Schmitt and Jeffrey S Thurnher, 'Out of the Loop: Autonomous Weapon Systems and the Law of Armed Conflict' 4 Harvard National Security Journal 231.

[9] Human Rights Watch and International Human Rights Clinic, 'Losing Humanity – The Case against Killer Robots' (2012) <www.hrw.org/sites/default/files/reports/arms1112ForUpload_0_0.pdf> accessed 6 June 2016; UNGA 'Report of the Special Rapporteur on Extrajudicial, Summary or Arbitrary Executions, Christof Heyns 23/47' (2013) UN Doc A/HRC/23/47. Other articles that specifically discuss concepts such as human judgment and human dignity are: Christof Heyns, 'Autonomous Weapons Systems: Living a Dignified Life and Dying a Dignified Death' in Nehal Bhuta and others (eds), *Autonomous Weapons Systems: Law, Ethics, Policy* (CUP 2016). Dan Saxon during the session 'Towards a Working Definition of LAWS' on 12 April 2016 at the UN CCW in Geneva, Switzerland <www.unog.ch/80256EDD006B8954/(httpAssets)/FC83553915BB0072C1257F9400442836/$file/2016_LAWS+MX_Presentations_Towardaworkingdefinition_Dan+Saxon.pdf> accessed 18 November 2016.

recognized that emerging technologies in the conduct of war could make war more precise, thereby potentially reducing incidental injury and collateral damage (eg precision guided munitions versus carpet bombing). On the other hand, dystopian scenarios in which machines become a dreadful threat to humanity are also at hand. These two views of the consequences of increasing autonomy in weapon systems affect the way autonomy is conceptualized and, in turn, influence tacit claims about what autonomous machines can and cannot do.[10] They implicitly shape much of the discourse on autonomous weapons.[11] Simultaneously, many participants in the debate on autonomous weapons still struggle with the question: what are we talking about? Looking at the discourse, it seems far from clear what an autonomous weapon is and what it would be capable of. This becomes particularly clear within the international political realm.

Since May 2013, several international political bodies have been discussing the issue of increasingly autonomous weapon systems in order to decide whether measures should be taken to restrict or halt this development. In November 2013, the High Contracting Parties to the Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May Be Deemed to Be Excessively Injurious or to Have Indiscriminate Effects (CCW) became the primary international political body to discuss this issue among states. Thus far, the CCW meetings have been informal meetings aiming at identifying the core issues that autonomous weapons raise;[12] however, as a convention aimed at law-making, the CCW is particularly concerned with questions related to the development of a potential Protocol. Hence, definitional issues are of prime concern. Today, three years and many deliberations later, controversy as to used terminology and definitions is still prominent and remains unresolved. These debates about semantics are not confined to the international political debates, they are also reflected in (academic) articles, (conference) papers, (governmental) reports and other papers in which authors use numerous

[10] Jeffrey Bradshaw and others, 'The Seven Deadly Myths of "Autonomous Systems"' (2013) IEEE Intelligent Systems 54, 2.

[11] Paul Scharre, 'Autonomous Weapons and Operational Risk' (2016) Center for a New American Security Project on Ethical Autonomy Working Paper, 3 <www.cnas.org/sites/default/files/publications-pdf/CNAS_Autonomous-weapons-operational-risk.pdf> accessed 6 June 2016.

[12] During the CCW Review Conference in December 2016 the High Contracting Parties agreed to establish an open-ended Group of Governmental Experts (GGE) in accordance with established practice. The GGE will meet for a period of two weeks—one week in April or August and one week in November 2017—to explore and agree on possible recommendations on options related to emerging technologies in the area of LAWS. All High Contracting Parties agreed upon establishing the GGE except for the Russian delegation who abstained from voting. The agreed recommendations are contained in document CCW/CONF.V/2 available at: <www.unog.ch/80256EDD006B8954/(httpAssets)/6BB8A498B0A12A03C1257FDB00382863/$file/Recommendations_LAWS_2016_AdvancedVersion+(4+paras)+.pdf> accessed 11 January 2017.

different definitions and terms to describe autonomous weapons. The debate that takes place in these communities influences the debate within political bodies, and vice versa. Therefore, they all play a role in the discourse on autonomous weapons and the confusion that seems to occupy it.

This article regards the discourse between these different actors—often coming from different sides of the spectrum—by focusing on the linguistic indeterminacy of the terms that are used to debate autonomous weapon systems. It seems that a common vernacular is being developed to describe autonomous weapons, but of which, the terms involved are not commonly understood. It is not new to observe that participants in a political process (such as the process in the CCW framework) use a common language that is not mutually understood. Similar observations are made by Kennedy in his analysis of the legal language and the effect that this common vernacular has on the relationship between law and war in political intercourse. Kennedy provides an example of the term 'perfidy' by explaining that the American military and those it has recently battled in Iraq, Afghanistan, and elsewhere have very diverging views about the meaning of the term.[13] 'Attacking from mosques dressing as civilians, recruiting suicide bombers – or bombing from thousands of feet, searching civilian homes, dividing the nation with cordons and checkpoints.'[14] What Kennedy points out as striking is that, although enemies stigmatize one another as not sharing in civilization, they find themselves using the same vocabulary to dispute the appropriateness of military ends and means.[15] Whereas Kennedy observes the effect of the language from an existing framework, ie the laws of war, this article will focus on the *parameters of the debate*, that is, the language that is developed and used to describe autonomous weapons. Hence, this article will consist of an analysis of the discourse on autonomous weapons—both in the framework of the CCW as in (academic) articles, advisory or governmental reports and other papers—with a particular focus on the semantics. The first section of this article takes a general approach to debates at the international political level—particularly in the CCW—and the role of definitions. The second section will introduce the language that is most frequently used to describe autonomous weapons. Comprehending and actively using this language is necessary in order to be able to understand the debate and be recognized as a participant in the discourse. At first glance, the definition and language seem quite clear; however, upon further examination this common vernacular reveals a number of complications and inconsistencies. This will be the focus of the third and final part of this article, in which I will address three popular terms, specifically, 'autonomy', 'target selection and attack' and 'human intervention'. The aim of this article is not to propose a definition that would solve linguistic disputes (if such a definition would even be viable); rather, it takes a more external perspective of which the purpose is to illustrate how a common vocabulary can

[13] David Kennedy, *Of war and law* (Princeton University Press 2006) 24.
[14] ibid 24.
[15] ibid 24–25.

complicate the discourse on autonomous weapons when the terms involved are not commonly understood or lack consistent interpretations. Hence, this article functions as a map for understanding the debate on autonomous weapons—imperative for anyone who would decide to participate in it.

2. Definitional disputes at the international political level

New technologies and new weapons have revolutionized warfare since time immemorial; we need only to think about the invention of the crossbow, gunpowder, the submarine and the airplane to remember how new technologies have changed the landscape of warfare.[16] As a consequence, debates about these technological revolutions have always been prominent. A technology that is currently being discussed in a number of international political bodies is autonomous technology in weapon systems. In May 2013, the issue of autonomous weapons was picked up by the United Nations after Special Rapporteur Christof Heyns presented his report on Lethal Autonomous Robotics during the 23rd session of the Human Rights Council.[17] A few months later, the issue was also discussed within the United Nations General Assembly First Committee on Disarmament and International Security in October 2013 in New York. And in November 2013, the High Contracting Parties to the CCW adopted a report that included a mandate for the Convention to convene on 13–16 May 2014 to discuss questions related to Lethal Autonomous Weapons Systems (LAWS).[18] The issue of LAWS has remained on the CCW's agenda ever since.

The CCW is an umbrella agreement that provides a framework for discussing prohibitions or restrictions on the use of certain conventional weapons since 1980. The chapeau Convention and the annexed Protocols focus on the use of specific types of weapons that are considered to cause unnecessary or unjustifiable suffering to combatants or affect civilians indiscriminately.[19] Over the past decades, the Parties to the CCW discussed a number of conventional weapons, such as mines, cluster munitions, incendiary weapons and blinding laser weapons. Since 1980, five Protocols have been annexed to the Convention. These Protocols restrict or prohibit the use of non-detectable fragments (Protocol I), mines, booby-traps and other devices (Protocol II), incendiary weapons

[16] Jakob Kellenberger, 'International Humanitarian Law and New Weapon Technologies' (34th Round Table on Current Issues of IHL, 8–10 September 2011) <www.icrc.org/eng/resources/documents/statement/new-weapon-technologies-statement-2011-09-08.htm> accessed 6 June 2016.

[17] Heyns (n 9).

[18] CCW, 'Meeting of the High Contracting Parties to the Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May Be Deemed to Be Excessively Injurious or to Have Indiscriminate Effects. CCW/MSP/2013/CRP.1' (2013) para 32.

[19] United Nations Office at Geneva, 'The Convention on Certain Conventional Weapons' <www.unog.ch/80256EE600585943/(httpPages)/4F0DEF093B4860B4C1257180004B1B30?OpenDocument> accessed 6 June 2016.

(Protocol III), blinding laser weapons (Protocol IV) and explosive remnants of war (Protocol V). The issue of LAWS is, so far, discussed in informal meetings of experts under the auspices of the CCW and will be further explored in an open-ended Group of Governmental Experts which shall meet for a period of 10 days in 2017. At first glance, the meetings concerning LAWS are not too different from the other debates that have taken place at the CCW. LAWS even raise some of the same issues as the contested landmines covered by Protocol II and the Ottawa Convention. For example, it could be said that, once activated, both landmines as well as LAWS function without further human intervention. Several commentators have hinted at the similarities, while others argue that the two are fundamentally different and a landmine cannot be considered an autonomous weapon.[20] A lot of this debate comes down to the fundamental question: what is an autonomous weapon?

In the first mandate to discuss LAWS, the weapons were described as *emerging* technologies because debates on LAWS started on the premise that LAWS do not yet exist—thereby also excluding landmines from the debate.[21] Although debating weapons that do not yet exist is rare, it is not unheard of within international politics. The CCW's fourth Protocol banning blinding lasers is an example of a weapon that was pre-emptively banned.[22] Discussions on instituting a ban on blinding lasers began in the mid-1970s when Sweden made the argument that the use of these weapons would lead to unnecessary suffering on the part of enemy soldiers and should therefore be unlawful under customary law.[23] Before these weapons could be produced and deployed, the employment of laser weapons that are specifically designed to cause permanent blindness was banned in 1995 in the fourth Protocol.

The difference, however, between discussing blinding laser weapons and autonomous weapons is that discussants will be much more capable to conceive the

[20] John Lewis, 'The Case for Regulating Fully Autonomous Weapons' (2015) 124 Yale Law Journal 4; Armin Krishnan, *Killer Robots: Legality and Ethicality of Autonomous Weapons* (Ashgate 2009); Jack Beard, 'Autonomous Weapons and Human Responsibilities' (2014) 45 Georgetown Journal of International Law 617, 668; Marco Sassóli, 'Autonomous Weapons and International Humanitarian Law: Advantages, Open Technical Questions and Legal Issues to be Clarified' (2014) 90 International Law Studies 308, 314. Art 36, 'Ban Autonomous Armed Robots' (*Article* 36, 5 March 2012) <www.article36.org/statements/ban-autonomous-armed-robots/> accessed 6 June 2016.

[21] Throughout the debate, this premise was scrutinized and existing systems with autonomy in their critical functions entered the debate. This is a matter that will be further analyzed later.

[22] Campaign to Stop Killer Robots, 'The Convention on Conventional Weapons and Fully Autonomous Weapons' (CSKR, 26 September 2016) <www.stopkillerrobots.org/wp-content/uploads/2013/09/KRC_BackgrounderCCW_26Sep2013.pdf> accessed 6 June 2016.

[23] Mines Action Canada, 'Lessons from Protocol IV on Blinding Laser Weapons for the Current Discussions about Autonomous Weapons' (May 2014) <https://bankillerrobotscanada.files.wordpress.com/2014/05/international-piv-memo-final.pdf> accessed 6 June 2016, 2.

potential consequences of a laser weapon that causes permanent blindness than understand the potential consequences of increasingly autonomous weapon systems that may cause all kinds of effects. For instance, an autonomous weapon might take the shape of a weapon that is capable of responding to a specific pre-programmed threat within strictly constrained operational bounds in terms of time and space, such as a defensive, stationary, ground system that only initiates an attack when it recognizes an incoming missile or an armed convoy within the pre-programmed settings. But an autonomous weapon could also be an offensive, mobile, aerial system that responds to any legitimate military objective it encounters over an unspecified area (maybe even across borders) with the possibility to choose from a range of weapons (eg precision guided munition or dumb bombs and lethal or non-lethal weapons) to engage those targets. This allows for a wide range of weapons and applications of autonomy (eg automation, learning, self-adaptation)[24] to enter the debate, causing the discourse about autonomous weapons to quickly turn into a manifestation of the circular argument between technological optimists and pessimists, both trying to prove their own theory about the future of autonomous technology. There seems to be no agreement as to what can be expected from this trend. As a result, different terms are being proposed as the object of discussion.

Debates about definitions to describe weapons systems that may be banned or restricted in some way are always contentious. This can be illustrated by earlier CCW processes, such as the CCW talks on cluster munitions in 2008 in which the development and negotiation of the definition was almost certainly the most challenging aspect.[25] In these sessions the Russian Federation focused its opening statement on the obstacles to negotiating a cluster munition proposal due to the lack of a definition of the weapon.[26] As a consequence, Denmark asked the Russians to facilitate discussions of experts to develop one and, even though Russia was reluctant to do so, they engaged in talks.[27] The result was a definition; however, it was a definition that contained no less than 20 sets of square brackets indicating competing views.[28] The idea that this draft definition with dozens of brackets was in any sense 'agreed' was of course absurd.[29] This is only

[24] For more information on the different applications of autonomy see the presentation given by Dr Leon Kester, TNO, on Monday 11 April 2016 at the UN CCW in Geneva, Switzerland. <www.unog.ch/80256EDD006B8954/(httpAssets)/29374C7829F996D1C1257F9B004A7540/$file/2016_LAWS+MX+Presentations_MappingAutonomy_Kesternote.pdf> accessed 16 November 2016.

[25] Stephen Goose, 'Cluster Munitions in the Crosshairs: In Pursuit of a Prohibition' in Jody Williams, Stephen Goose and Mary Wareham (eds), *Banning Landmines. Disarmament, Citizen Diplomacy, and Human Security* (Rowman & Littlefield Publishers Inc 2009) 233.

[26] John Borrie, *Unacceptable Harm: A History of how the Treaty to Ban Cluster Munitions was Won* (United Nations Publications 2009) 201–02.

[27] ibid 201–02.

[28] ibid 201–02.

[29] ibid 201–02. For more information on the practice of 'bracketing' see: Annelise Riles, 'Infinity within the Brackets' (1998) Cornell Law Faculty Publications Paper 783.

one example of negotiating definitions in the framework of the CCW, but it demonstrates that even if the weapon system, its characteristics and its use is known to those negotiating a treaty, there is no agreement when it comes to defining the weapon. What weapons are captured by the definition and what weapons will be exempt? Similar problems arise during the CCW meetings on Lethal Autonomous Weapons Systems during which State Parties point out the issue of a definition regularly. In 2014, while some suggested that a clarification would be necessary, most of the delegations indicated that it was too early to engage in such a negotiation.[30] Unsurprisingly, the High Contracting Parties to the CCW associate the process of agreeing on a definition to negotiations of a potential Treaty or Protocol. Thus, negotiating, or even just debating, a definition within such a political body—of which its purpose is to ban or restrict the use of certain types of weapons—is not merely a means to gain a clearer understanding of autonomous weapon systems, it also means that the Parties are entering a stage in which they are debating potential law. There may therefore be reason enough for State Parties to postpone these negotiations, prefer a vague definition, or even deliberately confuse the debate to keep it from progressing into a more formal stage.

After two years of debating definitions of LAWS and concepts, such as autonomy, automation, self-governance, Artificial Intelligence and meaningful human control, the chairman of the 2016 informal meetings decided to plan a whole day of expert presentations and interventions focusing on 'Towards a Working Definition'. The response was, not surprisingly, controversial. Whereas the need for a shared definition or understanding of LAWS was shared by many, states did not agree on what a LAWS would constitute. These contrasting views will be further discussed in the next parts in which I will illustrate that a seemingly common vernacular is being developed, but of which, the terms involved are not commonly understood.

3. The path to a common vernacular to describe autonomous weapons

The CCW currently has a total of 121 state parties. A total of 87 state parties participated in the first Meeting of Experts on LAWS in 2014; in subsequent meetings the number of participating states remained similar. Needless to say, coming up with a definition of autonomous weapons that will find agreement

[30] Meeting of the High Contracting Parties to the Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May Be Deemed to Be Excessively Injurious or to Have Indiscriminate Effects, 'Report of the 2014 informal Meeting of Experts on Lethal Autonomous Weapons Systems' (LAWS) CCW/MSP/2014/3' (2014) para 17.

among all (or even most) participating states is a multifaceted challenge. As explained previously, finding agreement on a definition within an international political body like the framework of the CCW is a long and complex exercise, compounded by the fact that independent experts, research organizations, think tanks, non-governmental organizations and the media also influence the discourse. These experts exercise tremendous power in the political process, potentially causing further fragmentation of the already chaotic political order.[31]

Nonetheless, the complexity of the issue of autonomous weapons requires sharing expertise from different fields; the chatter of diplomats in official meeting rooms does not suffice in addressing the issue comprehensively. Hence, these expert opinions are a necessary and indispensable part of the process. But the influence of this global group of experts can be a double-edged sword. On the one hand, these different actors bring expertise, knowledge and prowess to the table. On the other hand, they add even more perspectives, ideologies, (cognitive) biases, terminology and interpretations to the discourse. For example, a frequently asked question is: do autonomous weapons exist? Although the mandate to discuss these systems explicitly refers to them as 'emerging technologies', the views on whether these technologies already exist diverge. Human Rights Watch, for instance, claimed in their first report in 2012 that '"Killer robots" – fully autonomous weapons that could select and engage targets without human intervention – could be developed within 20 to 30 years'.[32] Thus, according to Human Rights Watch, these weapons do not yet exist. Similar statements have been made by the USA during CCW meetings. 'We also want to be clear that we are here to talk about future weapons [...] Therefore, we are not referring to remotely piloted aircraft, which as their name implies are not autonomous weapons, or other existing weapons systems.'[33] And also France states clearly that 'LAWS do not exist to date'.[34]

[31] See also Kennedy (n 13) 13–26. According to Kennedy, states share the global political system with innumerable actors from local constituencies, private actors, corporate and financial institutions, loose transnational networks and religious and other groups that are all part of the political context that takes place in a far more chaotic political environment. As a result, the international political order is fragmented and chaotic.

[32] Human Rights Watch and International Human Rights Clinic (n 9).

[33] All statements and papers are available at the website of the CCW <www.unog.ch/> accessed 11 January 2017. References to specific statements or papers will be provided accordingly. The USA during the UN CCW Meeting of Experts General Exchange on 13 April 2015 and 11 April 2016, Geneva, Switzerland. <www.unog.ch/80256EDD006B8954/(httpAssets)/EFF7036380934E5EC1257F920057989A/$file/2016_LAWS+MX_GeneralExchange_Statements_United+States.pdf> and <www.unog.ch/80256EDD006B8954/(httpAssets)/8B33A1CDBE80EC60C1257E2800275E56/$file/2015_LAWS_MX_USA+bis.pdf> accessed 16 November 2016.

[34] A non-paper on the Characterization of a LAWS presented by France during the CCW Meeting of Experts on LAWS, 11–15 April 2016, Geneva. <www.unog.ch/80256EDD006B8954/(httpAssets)/5FD844883B46FEACC1257F8F00401FF6/$file/2016_LAWSMX_CountryPaper_France+CharacterizationofaLAWS.pdf> accessed 16 November 2016.

Nevertheless, in more recent debates, existing weapon systems with autonomous capabilities are increasingly addressed. For instance, the International Committee of the Red Cross (ICRC) argues that 'It would be most helpful to ground discussions on autonomous weapon systems on current and emerging weapon systems that are pushing the boundaries of human control over the critical functions.'[35] In March 2016, the ICRC organized a 2-day expert meeting on autonomous weapons discussing a range of existing weapons with autonomous capabilities, such as certain missile and rocket defense weapons, vehicle active protection weapons, anti-personnel sentry weapons, sensor fused munitions, loitering munitions and a number of torpedoes and encapsulated torpedo mines. Both the ICRC as well as human rights watch (HRW) defines an autonomous weapon system (AWS) as any weapon system with autonomy in its critical functions.[36] But, whereas HRW claims that these weapons do not yet exist, the ICRC points out that examples of existing weapons with autonomy in their critical functions already exist and that including these current examples in a (broad) definition enables consideration to be given to experience of existing weapon systems with autonomy and to lessons learned.[37] Both views are shared by a number of High Contracting Parties—the former by states such as France and the USA and the latter by states as Switzerland and the Netherlands.[38] Both HRW and the ICRC are well-respected organizations and their expert views matter. Nevertheless, their diverging views on the state of the technology can complicate the debate between states.

Furthermore, this example also illustrates that a common vocabulary is used to describe autonomous weapons. Both the ICRC and HRW use very similar terms to describe (potentially different) autonomous weapons in the same discourse—that is the LAWS discourse in the CCW. The terms they use are recurring throughout the entire parlance, either within the CCW or outside its realm

[35] ICRC during the UN CCW Meeting of Experts General Exchange on 13 April 2015 and 11 April 2016, Geneva, Switzerland. <www.unog.ch/80256EDD006B8954/(httpAssets)/4CE346B40DDBF000C1257E2600616A59/$file/ICRC+general+-statement+CCW+LAWS+expert+meeting+13+04+2015+FINAL.pdf> and <www.unog.ch/80256EDD006B8954/(httpAssets)/9324B81015529E3DC1257F930057AF12/$file/2016_LAWS+MX_GeneralExchange_Statements_ICRC.pdf> accessed 16 November 2016.

[36] ICRC Expert Meeting on Autonomous Weapon Systems, 15–16 March 2016, Versoix, Switzerland. For the full report see <www.icrc.org/en/publication/4283-autonomous-weapons-systems#> accessed 16 November 2016.

[37] ibid. See also the ICRC during the UN CCW Meeting of Experts General Exchange on 11 April 2016, Geneva, Switzerland <www.unog.ch/80256EDD006B8954/(httpAssets)/9324B81015529E3DC1257F930057AF12/$file/2016_LAWS+MX_GeneralExchange_Statements_ICRC.pdf> accessed 16 November 2016.

[38] Switzerland and the Netherlands during the UN CCW Meeting of Experts after the session on Towards a Working Definition on 12 April 2016, Geneva, Switzerland. Switzerland: <www.unog.ch/80256EDD006B8954/(httpAssets)/A204A142AD3E3E29C1257F9B004FB74B/$file/2016.04.12+LAWS+Definitions_as+read.pdf> accessed 16 November 2016. Statements of the Netherlands unavailable.

(in academic articles, governmental reports, policy papers etc.). Some further comparisons between proposed definitions will follow.

The first governmental policy that spoke of autonomous weapons was the US DoD Directive 3000.09, published in November 2012.[39] The Directive described an autonomous weapon system as '[a] weapon system that, once activated, can select and engage targets without further intervention by a human operator'.[40] The exact same definition is used by United Nations Special Rapporteur Christof Heyns in his report on Lethal Autonomous Robotics.[41] The Campaign to Stop Killer Robots describes (fully) autonomous weapon as 'robotic weapons [that] would be able to choose and fire on targets on their own, without any human intervention'.[42] Furthermore, the ICRC has suggested 'that "autonomous weapon systems" is an umbrella term encompassing any weapon system that has autonomy in the critical functions'.[43] 'That is, a weapon system that can select and attack targets without human intervention.'[44] The aforementioned definitions have been influential in the discourse on autonomous weapons, because they have been proposed by influential actors, from an early stage of deliberations and they have many similarities. Frequently used terms are 'autonomy', 'target selection' and 'attack'[45] and 'human intervention'. This common vocabulary resulted in a definition that is, as of now, most broadly used by the international community to describe autonomous weapon systems. Mostly, autonomous weapons are defined as *weapons that are capable of selecting and attacking targets without human intervention*. The main focus within this definition lies on the so-called critical functions of target *selection* and *attack* and the absence or lack of *human intervention* in relation to the system's *autonomy*.

The emergence of this common vocabulary is certainly an interesting and notable achievement; however, that this vocabulary itself is a pluralistic one is potentially troubling.[46] Whereas this definition, at first glance, seems to clarify what an autonomous weapon is or could be, further examination of this definition and its use reveals a number of complications. The terms are fluid and pluralistic;

[39] Only the USA and the UK published policies that specifically address the issue of autonomous weapons.

[40] US Department of Defense, 'Directive 3000.09' (November 2012) <www.dtic.mil/whs/directives/corres/pdf/300009p.pdf> accessed 6 June 2016, 13.

[41] Heyns (n 9) 1.

[42] Campaign to Stop Killer Robots, 'Learn' (*CSKR*, nd) <www.stopkillerrobots.org/learn/> accessed 6 June 2016.

[43] ICRC (n 37).

[44] ICRC, 'Views of the International Committee of the Red Cross on autonomous weapon systems' Working Paper <www.unog.ch/80256EDD006B8954/(httpAssets)/B3834B2C62344053C1257F9400491826/$file/2016_LAWS+MX_CountryPaper_ICRC.pdf> accessed 6 June 2016.

[45] Together they are also called 'critical functions' by the ICRC, 'choose' and 'fire' by the Campaign to Stop Killer Robots, and 'select' and 'engage' by the United States and Heyns. Nonetheless, actors and organizations use the terms interchangeably.

[46] See also Kennedy on the emergence of a common legal vocabulary. Kennedy (n 13) 42.

hence, they are surrounded by confusion often resulting in lengthy semantic disputes. What is meant by terms such as 'autonomous', 'select and attack' and 'human intervention'? The meaning of these terms seems far from settled. They are sometimes part of broader concepts; they are subjected to the logical fallacy of equivocation; they can have diverging meanings throughout different disciplines; they often have different labels that are used interchangeably; and some are just inherently complex. In the following part, I will elaborate upon these most debated terms: 'autonomy', 'target selection and attack' and 'human intervention'.

4. Differences without distinction and distinction without difference

A. Autonomy

The term autonomy generates the most intricate, emotionally-laden and connotation-loaded debates. 'There is a myth that autonomy is some single thing and that everyone understands what it is.'[47] However, the word autonomy is employed with different meanings and intentions and can be viewed from many different angles.[48] For example, autonomy, as described by the Stanford Encyclopedia of Philosophy (as well as the Cambridge and Oxford dictionaries), refers to self-governance, the capacity to be one's own person and to live one's life according to reasons and motives that are taken as one's own. This description of autonomy is derived from the combination of the Greek terms signifying self (auto) governance (nomos).[49] However, autonomy also has another sense in everyday usage, that is, the capability for unsupervised operation. Both of these descriptions of autonomy are used in the discourse on autonomous weapons. On the one hand, images of self-governing robots are used to describe or picture LAWS—such as the dystopian 'Terminator' scenario of a humanoid machine independently selecting and attacking targets in a dynamic and complex urban environment for reasons of its own. On the other hand, it seems relatively clear to the Parties to the CCW that the 'Terminator' is not a realistic scenario and that notions of machines having free will should perhaps not be the focus of the debate. Nonetheless, there seems to be no common baseline of understanding what a LAWS constitutes.

Diverging notions of autonomy do not end here. Additional terms that are used to describe autonomy are 'automation', 'Artificial Intelligence' (or 'intelligence') and 'learning' (or 'machine learning', 'deep learning or 'self-learning'). The term 'automation' often implies a more simplistic system, whereas the latter two terms are used to refer to more complex technologies. 'Artificial Intelligence' and 'learning' often raise the impression that the autonomous weapon would have capabilities that are human-like. Although machine learning is not the same as

[47] Bradshaw and others (n 10) 2.
[48] ibid 2.
[49] ibid 2.

human learning and Artificial Intelligence is not analogous human intelligence, these traits are often confused. The human tendency to anthropomorphize robots—ie project human traits to non-humane objects—is very prominent in the debate and causes confusion as to what to expect from such developments.[50] The autonomous characteristic of LAWS therefore further complicates a meaningful discussion on the challenges that these weapons may raise.

When autonomy is elucidated it is mostly explained or referred to as being either 'automation', 'learning' or some (other) form of 'Artificial Intelligence'.[51] Examples can be found throughout the entire discourse. One example originates from a scholarly article in which the author reserves the word 'autonomous' to explain 'LARs [Lethal Autonomous Robots] that learn, and are able to target individuals and other military objectives that may not emit signals or travel at particular speeds or trajectories [that] would require a meaningful level of artificial intelligence'.[52] The author specifically refers to 'learning' and levels of 'Artificial Intelligence'.[53] Another example indicating that learning or (artificial) intelligence is a necessary asset of an autonomous weapon can be found in a US Air Force publication in which it is explained that in order to achieve autonomy a system must 'have a set of intelligence-based capabilities that allow it to respond to situations that were not programmed or anticipated in the design'.[54] The document relates autonomy to intelligence; but not everyone agrees that they are the same. Ironically, a researcher of the US Air Force Research Lab

[50] This unreflective attribution of human traits to AWS is too risky to be accepted. Karolina Zawieska during the session on characteristics of LAWS on 15 April 2015 at the UN CCW in Geneva, Switzerland <www.unog.ch/80256EDD006B8954/(httpAssets)/369A75B470A5A368C1257E290041E20B/$file/23+Karolina+Zawieska+SS.pdf> accessed 16 November 2016. For more information on anthropomorphizing robots also see: Noel Sharkey, 'The Evitability of Autonomous Robot Warfare' (2013) 94 International Review of the Red Cross 886, 791; Drew McDermott, 'Artificial Intelligence Meets Natural Stupidity' (1981) Mind Design 143 and: Julie Carpenter, 'Just Doesn't Look Right: Exploring the Impact of Humanoid Robot Integration into Explosive Ordnance Disposal Teams' in Rocci Luppicini (ed), *Handbook of Research on Technoself: Identity in a Technological Society* (IGI Global 2012) 609–36.

[51] Another application of autonomy would be 'self-adaptation'. The term self-adaptation is relatively new to the discourse and has only recently received more attention. See the presentation given by Dr Leon Kester, TNO, on Monday 11 April 2016 at the UN CCW in Geneva, Switzerland (n 24).

[52] Heather Roff, 'The Strategic Robot Problem: Lethal Autonomous Weapons in War' (2014) 13(3) Journal of Military Ethics 211, 213.

[53] The terms are far from agreed, subsequently, causing debates about 'Artificial Intelligence' and 'learning' to turn into anthropomorphic debates within which many competing definitions and theories of intelligence lead to connotation-loaded and emotionally-laden controversy. Luke Muehlhauser and Louie Helm, 'Chapter 6: The Singularity and Machine Ethics' in Amnon Eden and others (eds), *Singularity Hypothesis – A Scientific and Philosophical Assessment* (Springer 2012) 103.

[54] United States Air Force, 'Autonomous Horizons – System Autonomy in the Air Force – A Path to the Future' (June 2015) <www.af.mil/Portals/1/documents/SECAF/AutonomousHorizons.pdf?timestamp=1435068339702> accessed 6 June 2016, 3.

points out that this is a faulty comparison as 'many stupid things are quite autonomous (bacteria) and many very smart things are not (my 3-year old daughter seemingly most of the time)'.[55]

Others explain autonomy in terms of 'automation' or some form of (pre-)programming of a set of rules into a machine making it capable of independently responding to inputs from sensors by following that pre-defined set of rules to provide an outcome. Rather than self-governance or free will, these types of autonomous or automated systems (the terms are often used interchangeably) are expected to behave exactly as programmed (often in a structured environment). This understanding of pre-programmed autonomy can, for example, be found in an advisory report in which an AWS is described as 'A weapon that, without human intervention, selects and engages targets matching certain predefined criteria, following a human decision to deploy the weapon on the understanding that an attack, once launched, cannot be stopped by human intervention.'[56] This understanding of autonomy is also presented in expert panels during the CCW Meeting of Experts, such as the presentation delivered by an expert who stated that 'One commonality of AWS is that they engage targets or groups of targets which have been preselected by humans – either specifically or as a general class – while the machines or munitions fulfill their tasks in an autonomous mode once they have been fired, released or deployed.'[57]

Finally, approaches generally do not limit their focus to the application of autonomy (eg automation or learning) as discussed above; they often include references to the human–machine relationship (eg fully or semi-autonomous) and the type of decision being automated (eg critical functions).[58] Additionally, as mentioned previously, terms are often used interchangeably. Sometimes distinctions are made when there is no actual difference, but mostly the terms are used without difference when distinction is in fact necessary.[59] This makes understanding autonomy a very complicated matter.

[55] Bruce Clough, 'Methics, Schmetrics! How the Heck do you Determine a UAV's Autonomy Anyway?' (2012) Air Force Research Laboratory, Wright Patterson AFB, OH, 45433.

[56] Joint Committee on Autonomous Weapon Systems, 'Autonomous Weapon Systems – The Need for Meaningful Human Control' (No 97 AIV / No 26 CAVV, 2015) <http://aiv-advice.nl/8gr> accessed 6 June 2016, 11.

[57] Colonel (ret) Wolfgang Richter (German Institute for International and Security Affairs) during the UN CCW Meeting of Experts on 14 April 2015, Geneva, Switzerland <www.unog.ch/80256EDD006B8954/(httpAssets)/16C9D6BFA43D95B3C1257E5900452E5E/$file/2015_LAWS_Richter-PP-corr.pdf> accessed 16 November 2016.

[58] Examples are: US Defense Science Board (n 7), United Nations Institute for Disarmament Research (n 6), Joint Committee on Autonomous Weapon Systems (n 56).

[59] Also explained by Bradshaw and others (n 10).

B. Target selection and attack

Compared to the term 'autonomy', the critical functions of target 'selection' and 'attack' would seem significantly less ambiguous. Nevertheless, target 'selection' and 'attack' have their own linguistic complications. But as their intricacies are less obvious, different interpretations of the terms are sometimes neglected. The term 'critical functions' was first introduced by the ICRC in their expert meeting on autonomous weapon systems in 2014.[60] There are functions that, when made more autonomous, are considered generally acceptable or non-critical (eg navigation, take-off and transport), while there are other functions that are considered of great concern when the characteristic of autonomy is applied (eg search for or detect, identify, track, select, attack, use force against, neutralize, damage or destroy).[61] This list of critical functions is summarized in two functions, namely target *selection* and *attack*. I will address these functions separately.

Firstly, target 'selection' is sometimes understood as target 'recognition', while the term is also used to describe more deliberative processes of target planning and development. An example of the latter can be found in an article on military targeting processes in which a scholar refers explicitly to more deliberate processes of target planning and development to describe the autonomous functions that she understands as most threatening. According to the author, recognizing or discerning combatants from non-combatants is far from the only issue that arises out of the creation and fielding of autonomous weapons; making targeting decisions (eg selecting targets or creating targeting lists) is a difficult process that requires the ability of strategy making. 'For these reasons, targeting is described as a "process", whereby the commander and his/her team engage in constant deliberation about "selecting and prioritizing targets and matching the appropriate response to them".'[62] This discrepancy between target selection as target recognition and target selection as a deliberative planning phase, during which target lists are developed and targets are selected, is also emphasized by a North Atlantic Treaty Organization (NATO) publication in which it is stressed that although AWS conduct autonomous target selection (recognition) they do not operate in a vacuum due to the extensive planning process (ie NATO's targeting process) that precedes this moment.[63]

[60] ICRC expert meeting on Autonomous Weapon Systems, Technical, Military, Legal and Humanitarian Aspects, 26–28 March 2014, Geneva, Switzerland. For the full report see <www.icrc.org/en/publication/expert-meeting-autonomous-weapon-systems-technical-military-legal-and-humanitarian-0> accessed 16 November 2016.

[61] United Nations Institute for Disarmament Research (n 6) 3.

[62] Roff (n 52) 217.

[63] For more debates on targeting processes or 'the loop' see also the presentation given by the author during the CCW Meeting of Experts on 12 April 2016, Geneva, Switzerland <www.unog.ch/80256EDD006B8954/(httpAssets)/A053D83CCD3B95C5C1257F9B004EAB6E/$file/2016_LAWS+MX_presentations_towardsaworkingdefinition_ekelhofnotes.pdf> accessed 16 November 2016. Mark Roorda, 'NATO's Targeting Process: Ensuring Human Control Over (and Lawful Use of) 'Autonomous'

Nonetheless, target selection is often not assessed in such a detailed manner; instead, a narrower interpretation prevails. Regularly, target 'selection' seems to be understood as target 'recognition' by focusing on the ability of the AWS to discern combatants from non-combatants. For example, one author claims that 'A major problem with weapons systems in which a computer program select targets and initiates attack is that to identify and select targets requires well-defined target recognition software.'[64] The author elaborates upon four of these automatic target recognition methods, explaining that they have severe limitations and should, therefore, be subject to strict limitations in terms of human–machine relationship.[65] Target recognition and target planning/development are two drastically different activities that require different levels of reasoning. Hence, when speaking about the critical functions of target selection and attack, it matters how these terms are interpreted. But although autonomy in the critical functions of weapons are considered an important characteristic of autonomous weapons, the meaning of the word target 'selection' is scarcely elucidated, making target selection another fluid and pluralistic term.

Secondly, the term 'attack' is addressed occasionally. Article 49 of Additional Protocol I to the Geneva Conventions describes attacks as 'acts of violence against the adversary, whether in offence or in defence'. A number of 174 State Parties and three State Signatories agreed upon this definition of attacks. But even a common framework, such as the laws of war, does not resolve interpretational issues as long as there are politics and the law a tool of strategy.[66] The term attack in relation to autonomous weapons does not, by itself, raise a lot of unique questions;[67] however, it does generate certain deliberations in relation to the exercise of human control. UK NGO Article 36 claims that Meaningful Human Control (this concept will be further discussed in the next part) should be exercised over 'every individual attack'.[68] Subsequently, the following question is: what can be considered an individual attack? Is it

Weapons' in Andrew Williams and Paul Scharre (eds), 'Autonomous Systems – Issues for Defence Policy Makers' (2015) NATO Headquarters Supreme Allied Commander Transformation 152 and William Marra and Sonia McNeil, 'Understanding "The Loop": Regulating the Next Generation of War Machines' (2013) 36 Harvard Journal of Law and Public Policy 3.

64 Noel Sharkey, 'Towards a Principle for the Human Supervisory Control of Robot Weapons' (2014) 36 Politica & Società 4.

65 ibid 4.

66 See also Kennedy (n 13) epilogue.

67 The definition of 'attack' is frequently discussed in relation to cyber warfare, sometimes in relation to autonomy. See, for example, Michael Schmitt, '"Attack" as a term of Art in International Law: The Cyber Operations Context' (2012) NATO CCD COE Publications 283.

68 Art 36, 'Killing by machine – key issues for understanding meaningful human control' (*Article* 36, 9 April 2015) <www.article36.org/autonomous-weapons/killing-by-machine-key-issues-for-understanding-meaningful-human-control/> accessed 6 June 2016.

considered a single force application on a single target or can it entail several instances of force application exercised over multiple targets? The questions about the meaning of an individual attack are put on the table; the answers however are significantly less. It could be concluded that there are some ambiguities regarding the term 'attack' in relation to autonomous weapons; nevertheless, this remains on the background giving priority to more contested elements of the definition—such as the phrase 'human intervention'.

C. Human intervention

Finally, 'human intervention' is a much-discussed term. Rather than focusing on the system's autonomy (technology- or platform-oriented approach), the focus on the human role or human–machine relationship seems to gain the most traction, potentially because people can more easily relate to their role as a human operator or supervisor, than conceive of something as complex and debated as autonomy.[69] But what is human intervention, what should it look like and how would it have to be applied? Is, for example, pushing a button that results in firing a weapon every time a light bulb in the room goes on human intervention?[70] Perhaps it is. However, is that also the kind of human intervention we accept in terms of autonomous weapon systems? Due to the fact that it is unclear how 'human intervention' should be understood and applied to AWS, different concepts have been proposed as a way of framing it and further its development.

The USA proposes to use the phrase 'appropriate levels of human judgment' to reflect the premise of human machine interaction. The UK suggests the term 'intelligent partnership' and the UK ngo Article 36 coins the term 'meaningful human control'. There might be certain differences in terms of wording; for instance, the term 'judgment' seems to be a narrower standard than 'control'. But there are also similarities, such as the purpose of the adjectives; the terms 'meaningful' and 'appropriate' both indicate a certain level under which human intervention is deemed unacceptable. Therefore, some commentators use the terms (effective, appropriate and meaningful) interchangeably.[71] The choice for one formulation over another seems to be partially based upon existing policy of

[69] Merel Ekelhof, 'Human Control in the Targeting Process' (ICRC Expert Meeting, Versoix, March 2016). See the full ICRC report (n 36).

[70] Michael Horowitz and Paul Scharre, 'Meaningful Human Control in Weapon Systems: A Primer' (2015) Center for a New American Security Project on Ethical Autonomy Working Paper, 10 <www.cnas.org/sites/default/files/publications-pdf/Ethical_Autonomy_Working_Paper_031315.pdf> accessed 6 June 2016.

[71] Human Rights Watch, 'Killer Robots and the Concept of Meaningful Human Control' (*HRW*, 11 April 2016) <www.hrw.org/news/2016/04/11/killer-robots-and-concept-meaningful-human-control> accessed 6 June 2016; Art 36, 'Key elements of Meaningful Human Control' (*Article* 36, April 2016) <www.article36.org/wp-content/uploads/2016/04/MHC-2016-FINAL.pdf> accessed 6 June 2016; see also the different statements and interventions made by states during the CCW Meeting of Experts of 2014, 2015 and 2016.

certain states. For instance, the phrase 'appropriate levels of human judgment' emanates from the US DoD Directive 3000.09. As this is part of official US policy, the USA is not likely to adopt another phrase such as 'meaningful human control'. In addition, the term 'meaningful human control' originates from a paper of the NGO Article 36, a member of the steering committee of the Campaign to Stop Killer Robots. This could lead to a strong association of the concept with the goals and aims of the Campaign—ie a comprehensive and pre-emptive ban on autonomous weapons—potentially resulting in states being more hesitant to adopt it when these goals are not mutually shared. Perhaps that is why the UK (unsupportive of a ban) proposes the phrase 'intelligent partnership', but this remains speculative. It is evident however that the majority of states buttress the concept of 'meaningful human control'. Although the concept is still rather vague (giving states the opportunity to influence its further development), discussions concerning its substantialization are progressing within CCW sessions and in scholarly articles, presentations, reports and other papers.[72]

Although there is a majority of states in the CCW that prefer to focus on the concept of 'meaningful human control', there is, unsurprisingly, no consensus among all the High Contracting Parties. As CCW decisions are to be taken by consensus, the term 'human involvement' was introduced in the draft recommendations of the past CCW meetings in April 2016. The inclusion of another phrase to replace the existing ones was necessary to reach a consensus, perhaps because the established terms were claimed by (or strongly linked to) certain states or organizations and, as a consequence, vigorously debated. Which phrase will eventually be adopted—if any—and, moreover, how it will be interpreted remains to be seen.[73]

[72] See, for example, Horowitz and Scharre (n 70); Merel Ekelhof, 'Autonome Wapens: een verkenning van het concept van Meaningful Human Control' (2015) 184 Militaire Spectator 5 232; Art 36 (n 65); United Nations Institute for Disarmament Research (n 6). Among others, Ms Maya Brehm (Geneva Academy) and Professor Pekka Appelqvist (Scientific Advisory Board for Defense, Ministry of Defense Finland) explain the advantages of the concept of meaningful human control during the sessions on characteristics of LAWS on 14 and 15 April 2015 at the UN CCW in Geneva, Switzerland. See also the Working paper submitted by Austria to the Expert Meeting on Lethal Autonomous Weapons Systems from April 13–17 2015 on the concept of 'meaningful human control' <www.unog.ch/80256EDD006B8954/(httpAssets)/8D3B4C00FEFCA54CC1257E22004D14A4/$file/Working+Paper+by+Austria.pdf> accessed 16 November 2016.

[73] In the April meetings the High Contracting Parties considered the draft recommendations (which constituted no formal decision); hence, consensus was not a requirement. However, in order to increase the likelihood of adoption of the draft recommendations in the Review Conference in December 2016, reaching consensus on certain issues prior to those debates was preferred by certain states, in particular by the Chair of that year's session German Ambassador Michael Biontino. During the Review Conference in December 2016, an open-ended Governmental Group of Experts was established and the High Contracting Parties agreed (Russia abstained) to adhere to the agreed recommendations. The agreed recommendations are

5. Conclusion

Throughout this article I have attempted to show that the discourse of autonomous weapons is increasingly based on a shared vocabulary set. From these shared terms, a common vernacular or framework arose that resulted in a definition that is now broadly used by different actors in the discourse on autonomous weapons. Throughout the debate, different terms are suggested as the object of discussion, but a number of terms stand out. Particularly prominent terms are 'autonomy', 'select and attack' and 'human intervention'. These terms are the basis of a widely used and broadly accepted definition describing autonomous weapon systems as weapons that are capable of selecting and attacking targets without human intervention.

This definition became the framework within which autonomous weapons are discussed; particularly in a law-making body as the CCW framework it can function as a demarcation—anything that is not captured by the definition should be excluded from a potential Protocol and conceivably from the discourse as a whole. However, although the vernacular consists of common terms, these terms are fluid and pluralistic and, therefore, not commonly understood by those making use of the vocabulary. Firstly, autonomy is not uni-dimensional; the term 'autonomy' can mean a number of things.[74] It can be derived from the combination of the Greek terms signifying self (auto) governance (nomos), but autonomy also has another sense in everyday usage, that is, the capability for unsupervised operation.[75] Additionally, autonomy is also associated with different technological applications ranging from automation to learning and (other) forms of Artificial Intelligence. Furthermore, the critical functions of target 'selection and attack' may seem less ambiguous, but in relation to autonomous weapon systems the terms can be used to describe different actions. Target selection is sometimes understood as target recognition, while the term is also used to describe more deliberative processes of target planning and development. And the term 'attack' merits further deliberation when debates about human intervention over individual attacks are to be considered as a standard for autonomous weapons' use. Finally, 'human intervention' is being reframed as 'appropriate levels of human judgment', 'intelligent partnership' and 'meaningful human control'. The phrases have similarities (eg the adjectives have a similar purpose, namely setting a boundary between unacceptable and acceptable forms of human intervention) and they have differences (eg the terms involved can have distinct meanings; judgment is not the same as control or partnership). All these terms—autonomy, target selection and attack, human intervention—are subject to multiple

contained in document CCW/CONF.V/2 available at: <www.unog.ch/80256EDD006B8954/(httpAssets)/6BB8A498B0A12A03C1257FDB00382863/$file/Recommendations_LAWS_2016_AdvancedVersion+(4+paras)+.pdf> accessed 11 January 2017.

74 Bradshaw and others (n 10) 2.

75 ibid 2.

interpretations causing those participating in the debate to apply distinction when there is no difference, but, moreover, to neglect differences by not making distinctions.

This article shows that having a common vernacular to describe autonomous weapons may seem a notable achievement, but upon further examination this common vocabulary appears to be fluid and pluralistic. This complicates the discourse on autonomous weapons, in particular when one is in search of concrete answers to sensitive issues or even pursuing the development of an additional Protocol to the CCW. In the current situation, any definition that is introduced to this debate, no matter how adequate or well-defined, will be interpreted differently among its participants. Striving for a definition can be understandable, but the result of introducing one in this current discourse renders any definition practically meaningless. Hence, clarification of these terms to describe autonomous weapons seems important in order to be able to engage in a constructive debate on the issue. But although the fluidity and pluralistic nature of the vocabulary itself may be troubling, it may also be the subtle secret of its success.[76] Keeping a definition vague in an international political body that is to take decisions by consensus can turn out to be a brilliant strategy. Hence, the question arises whether, at this point in time, a precisely defined and mutually understood definition is needed, desired and viable.

Either way, semantic disputes in the discourse on autonomous weapons are eminent and often result in challenging situations. Nevertheless, by being aware of the different interpretations of the (common) language, those taking part in the debate can create the environment within which these multifaceted issues can continue to be discussed. The aim of this article was not to propose a definition, but to map this semantic discourse, to introduce the key terms and to elaborate on the semantic issues that surround these terms. Recognizing this language is paramount in order to be able to understand the discourse. Additionally, as this is the recognized language used to describe autonomous weapons, anyone willing to participate in the discourse should become familiar with using these common terms and the interpretative activities that surround it, as those not mastering the language are less likely to be heard. Gaining this understanding is vital as the issue of autonomous weapon systems is too relevant to be abandoned on the basis of semantic discrepancies.

[76] Kennedy (n 13) 42.