

MAPPING THE DEBATE ON LAWS AT THE CCW: TAKING STOCK AND MOVING FORWARD

VINCENT BOULANIN

I. INTRODUCTION

There has been an identifiable trend towards the automation of weapons and the networks in which they are embedded in recent decades. Until now, most or all of this automation has included the presence of a human operator somewhere in the ‘sensing–decision–action loop’. Existing weapon systems, with the highest degree of automation, are also, for the time being, primarily being used in predictable environments, for defensive purposes and against material targets. However, ongoing developments in information and communication technology (ICT), machine learning, artificial intelligence and robotics, among other things, are expected in the near future to provide realistic options for ‘lethal autonomous weapon systems’ (LAWS) that could be deployed in dynamic and complex environments, and complete sophisticated and adaptive offensive tasks with little or no human input or supervision.¹

There is no internationally agreed definition of LAWS.² The spectre of weapons that require no

¹ International Committee of the Red Cross (ICRC), *Autonomous Weapon Systems: Technical, Military, Legal and Humanitarian Aspects* (ICRC: Geneva, 2014), pp. 59–60. Human involvement in the sensing–decision–action loop with regard to targeting has been categorized in three ways: (a) human-in-the-loop, robots can select targets and deliver force only with a human command; (b) human-on-the-loop, robots can select targets and deliver force under the oversight of a human operator that can override the robots’ actions; and (c) human-out-of-the-loop, robots can select targets and deliver force without any human input or interaction. Docherty, B., *Losing Humanity: The Case Against Killer Robots* (Human Rights Watch/International Human Rights Clinic: Washington, DC, 2012).

² As a report by the United Nations Institute for Disarmament Research (UNIDIR) notes, the terminology is also inconsistent. States and non-governmental organizations (NGOs) use different labels, which reflect different concerns. Concepts such as ‘killer robots’, ‘lethal autonomous robotics’ or ‘LAWS’ are intended to stress different variables, such as the intended use, or the use of lethal force on human targets, and the level of human control (autonomous, semi-autonomous

SUMMARY

Since 2013 the governance of lethal autonomous weapon systems has been discussed within the framework of the 1980 United Nations Convention on Certain Conventional Weapons. The discussion is at an early stage, with most states still in the process of understanding the issues at stake. Extended discussions will be necessary to resolve contentious issues and generate a constructive basis for any potential formal negotiation.

The European Union has not yet been able to take a clear stance on the debate, due to the lack of a common perspective among its member states. However, it could implement measures that would help its member states to develop, refine or reconsider their views. These include providing a structured framework for information sharing, supporting capacity building and supporting research in relevant areas. Such measures could foster discussion and ultimately narrow the gap between the different positions of member states.

ABOUT THE AUTHOR

Dr Vincent Boulain (France/Sweden) is a Researcher at SIPRI working on issues related to the production, use and control of emerging military and security technologies, notably cyber-security technologies and autonomous weapon systems. He currently leads a one-year research project looking at the technological and industrial developments enabling increasing autonomy in weapon systems. He received his PhD in Political Science from École des Hautes en Sciences Sociales [School for Advanced Studies in the Social Sciences], Paris, in October 2014.

His recent publications include ‘Implementing Article 36 weapon reviews in the light of increasing autonomy in weapon systems’, SIPRI Insights on Peace and Security no. 2015/1 (Nov. 2015); ‘Cyber threats and nuclear dangers’, CNND Policy Brief no. 17 (Nov. 2014, co-author); and ‘Arms production goes cyber: a challenge for arms control’, SIPRI Essay (May 2013).

human involvement in the decision-action phase or weapons that are programmed to ‘self-learn’, however, raises numerous concerns. These include about their moral acceptability, their potentially negative impact on inter-state relations and stability, their possible facilitation of recourse to the use of force and their compatibility with international humanitarian law (IHL) and international human rights law.³ At the same time, however, military planners see advantages in increasing the degree of autonomy in weapon systems, such as reducing the need for in-vehicle life-support systems or for an intervention force to rescue and evacuate personnel. Autonomous systems have the potential to be smaller and faster, to reduce the manpower burden and the need for high bandwidth communication, and to enhance capabilities in difficult environments beyond human control—and possibly to reduce the financial cost of war.

Since 2013 the governance of LAWS has been discussed within the framework of the 1980 United Nations Convention on Certain Conventional Weapons (CCW).⁴ This paper takes stock of the discussion that has taken place thus far, discusses how it might move forward and draws conclusions on how the European Union (EU) could engage in the future debate.

The study is based on a literature review of the academic discourse, official documents and the statements made by national delegations at CCW informal meetings. Background interviews were also conducted with governmental representatives, experts and non-governmental organizations (NGOs).⁵

Section I takes stock of the discussion and maps the different narratives that have emerged. Section II reviews how the discussion is likely to evolve at the forthcoming informal meeting of experts on LAWS in April 2016 and at the Fifth Review Conference of

and automatic). Others, such as ‘fully autonomous systems’ or simply ‘autonomous weapon systems’, refer to a more generic category of objects. See UNIDIR, *Framing Discussion on the Weaponization of Increasingly Autonomous Technologies* (UNIDIR: Geneva, 2014), p. 3.

³ Docherty (note 1); and Sharkey, N., ‘Saying “no!” to lethal autonomous targeting’, *Journal of Military Ethics*, vol. 9, no. 4 (2010).

⁴ 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 Convention, or ‘Inhumane Weapons’ Convention), with protocols I, II and III, opened for signature on 10 Apr. 1981, entered into force on 2 Dec. 1983, <<http://treaties.un.org/Pages/CTCTreaties.aspx?id=26>>.

⁵ Interviews were conducted with the CCW implementation unit, Article 36, Human Rights Watch, and representatives of Austria, Canada, Finland, France, Germany, Ireland, Italy, the Netherlands, Russia, Switzerland and the United States.

the CCW in December 2016. Section III provides recommendations for how the EU could support its member states to engage constructively in the discussion, and section IV presents conclusions.

II. TAKING STOCK OF THE DISCUSSION

The CCW as a framework for discussion

LAWS were designated an issue for discussion at the CCW in 2013.⁶ Because it deals with weapons that may be deemed to have an excessively injurious or indiscriminate effect, the Convention is seen as the relevant framework in which to discuss the governance of LAWS. The central concerns are over whether LAWS comply with basic principles of proportionality, distinction and precaution in attack.

Thus far, discussions on LAWS at the CCW have remained at the informal level. Two informal meetings of experts were convened with a mandate to ‘discuss the questions related to emerging technologies in the area of lethal autonomous weapons systems, in the context of the objective and the purpose of the Convention’. This is not unusual within the CCW, and there are other examples where expert meetings have preceded official negotiations.⁷

The current mandate gives no indication of what the outcome of the discussions on LAWS should be. It is therefore too early to say when a negotiation phase might start or what its outcome might be. The Campaign to Stop Killer Robots, an NGO coalition, is pushing states parties to negotiate and adopt a pre-emptive ban on the development, production and use of LAWS, but only a handful of states have expressed their readiness to discuss such a possibility so far.⁸

The informal meetings of experts organized in May 2014 and April 2015 lasted four days and five days, respectively. They revolved around presentations made by a variety of experts from civil society, which addressed, in a holistic and multidisciplinary way, a broad range of technical, ethical, legal, military and security issues.

⁶ Anthony, I. and Holland, C., ‘The governance of autonomous weapons’, *SIPRI Yearbook 2014: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 2014).

⁷ The discussion on blinding laser weapons was a notable exception as it took only two years for the parties to the CCW to reach consensus on a ban.

⁸ Bolivia, Cuba, Ecuador, Egypt, Ghana, the Holy See, Pakistan, Palestine and Zimbabwe have expressed clear support for a ban on LAWS. Croatia, Ireland and Sri Lanka were open to considering a ban.

The state of play

Discussions on LAWS at the CCW are still at an early stage. The topic may have been on the agenda for two years, but there have only been nine days of structured discussion involving states parties. Most states are still in the process of understanding the issues at stake and determining their positions. Only 65 states have expressed their views on the topic since 2013.⁹ Existing statements commonly acknowledge that this is a highly complex topic and that more discussion will be needed to generate a common understanding of the various issues. There have only been general discussions at the diplomatic level.

Of the representatives of states interviewed, none seemed willing to go beyond the statements already made by their country at the CCW.¹⁰ Delegations generally admit to still being in a learning phase and agree that more needs to be done to delineate the issues. The United Kingdom and the United States are the only two countries to have issued official policy documents dealing with autonomous weapon systems, but these documents do not go into significant detail about the legal, ethical and operational issues raised by these weapon systems.¹¹

The major challenge to developing a clear position on LAWS is the fact that delegations are dealing with what the German sociologist Ulrich Beck would call a ‘virtual reality’. Unlike other weapons discussed within the framework of the CCW, LAWS do not yet exist—and may never exist, depending on how they are defined—so aspects of the debate are inherently hypothetical. States are supposed to discuss and take decisions about future technologies that they cannot yet fully understand. Moreover, unlike landmines or blinding lasers, LAWS have highly diffuse technical characteristics.¹² Autonomy is a function that can

⁹ There are 121 high contracting parties to the CCW; 5 states have signed but not ratified the CCW. At the second informal meeting of experts, 90 states were represented (76 states parties, 1 signatory and 13 non-signatories). Wareham, M., *Campaign to Stop Killer Robots: Report on Activities* (Campaign to Stop Killer Robots: Washington, DC, Nov. 2015), <http://www.stopkillerrobots.org/wp-content/uploads/2013/03/KRC_ReportCCWannual16Dec2015_uploaded-1.pdf>.

¹⁰ A number of states declined the request for an interview, arguing that their position in the discussion was still embryonic.

¹¹ US Department of Defense, Directive 3000.09 on autonomy in weapon systems, 21 Nov. 2012; and British Ministry of Defence, Joint Doctrine Note 2/11: the UK approach to Unmanned Aircraft Systems, 30 Mar. 2011.

¹² Whether LAWS are a current reality depends on how they are defined. According to the definition used by some states and NGOs,

be introduced into weapon systems or networks of systems (rather than a single weapon platform) that might have multiple forms and functions, and may be used in diverse contexts at the tactical, operational and strategic levels, and for a wide variety of missions or tasks. The broad spectrum of weapon systems that fall within the concept of LAWS makes it extremely difficult to anchor the discussion in concrete terms.

As a result, states may have different views on what these weapons are, the challenges they pose and the policy considerations that should be taken into account. This lack of shared understanding was apparent during the informal meetings of experts in 2014 and 2015.

The emergence of competing narratives

During the four days of the first informal meeting of experts in 2014, competing narratives emerged on the key aspects of the discussion: the definition and characteristics of LAWS, the ethical concerns and legal challenges, and the way ahead. These competing narratives then crystallized at the second informal meeting of experts in 2015. States maintained their positions, when they did not develop them further, sometimes at the risk of widening the gap between various factions and further polarizing the discussion. For an overview of the competing narratives see box 1.

Terms and definition

Prior to any arms control negotiation, the scope of what is being discussed must be defined in order to reconcile different views. In May 2014 different opinions were expressed about whether it was necessary to define LAWS at that stage of the discussion. Some delegations saw the value of clarifying and defining the term, while others considered it premature to engage in such an exercise.

France indicated that it was ‘difficult and premature’ to define LAWS at this stage, while the USA stressed that it would be ‘imprudent if not impossible to define the terms now’.¹³ Both argued that the discussion was about ‘future technologies’ and that it was therefore

including the International Committee of the Red Cross, some existing systems, such as the Brimstone fire-and-forget missile or the Phalanx close-in weapon system, can be classified as autonomous weapons. They have raised only limited concerns, however, as they are primarily operated in simple, static or predictable environments, for defensive purposes or against material targets. International Committee of the Red Cross (note 1), pp. 59–60.

¹³ France, ‘Intervention générale’ [General remark], CCW Meeting of Experts on Lethal Autonomous Weapons Systems, Geneva, 13 May 2014;

impossible to foresee what they would look like and be able to do. NGOs from the Campaign to Stop Killer Robots endorsed this argument. According to Richard Moyes from the NGO Article 36, it was too early and would be unproductive to engage in a definition exercise, as to do so would narrow the discussion to technical aspects. Arguably, it should not be necessary to have a fixed definition of what LAWS are in order to discuss the challenges raised by increasing the autonomy of a weapon.

Other delegations suggested that it would be helpful to have a common understanding of the matter at hand. Austria stated that to ‘come closer to the most extensive agreed definition of what we are talking about would be one desirable outcome’ of the informal meeting of experts.¹⁴ China made a more radical statement, claiming that if ‘there is no clear definition there will be no focus in our discussion and it will not come to any meaningful conclusion’.¹⁵ Japan proposed an intermediate position, stating that ‘it is imperative to develop a common understanding about what we perceive as LAWS in order to advance the discussions’, while at the same time it may be too early to engage in deliberations on the definition at this stage.¹⁶

Some states specified how they broadly understood LAWS in their statements. To Norway, LAWS are ‘weapon systems that search for, identify and use lethal force to attack targets, including human beings, without a human operator intervening, and without meaningful human control’, while to Austria, LAWS are ‘weapons that in contrast to traditional inert arms, are capable of functioning with a lesser degree of human manipulation and control, or none at all’.¹⁷ These formulations bear a clear resemblance to the definitions that can be found in the literature. To the UN Special Rapporteur on extrajudicial, summary or arbitrary executions, Christof Heyns, LAWS are ‘robotic weapons systems that once activated, can select and engage targets without further intervention by a human operator. The important element is that the robot has autonomous choice regarding

and USA, ‘US delegation opening statement’, CCW Meeting of Experts on Lethal Autonomous Weapons Systems, Geneva, 13 May 2014.

¹⁴ Austria, ‘General debate, statement by Austria’, CCW Meeting of Experts on Lethal Autonomous Weapons Systems, Geneva, 13 May 2014.

¹⁵ China, ‘Closing statement’, CCW Meeting of Experts on Lethal Autonomous Weapons Systems, Geneva, 16 May 2014.

¹⁶ Japan, ‘General exchange’, CCW Meeting of Experts on Lethal Autonomous Weapons Systems, Geneva, 13 May 2014.

¹⁷ Austria (note 14).

the target and the use of force’.¹⁸ To Noel Sharkey, spokesperson for the Campaign to Stop Killer Robots and the International Committee for Robot Arms Control, LAWS are ‘robots that operate in an open and unstructured environment; receive information from sensors; process the information in order to move, select targets and fire—all without human supervision’.¹⁹

The UK and the USA, the only countries to have published official policy documents related to autonomous weapons, did not present the definition they had already used at the national level to the informal meetings of experts. The US definition in Department of Defense Directive 3000.09 on autonomy in weapon systems is not significantly different to those formulated above. It presents autonomous weapons as ‘weapons that, once activated, can select and engage targets without further intervention by a human operator. This includes human supervised weapon systems that are designed to allow human operation to override operation of the weapons systems, but can select and engage targets without further human input after activation’.²⁰ The UK, on the other hand, has a more specific interpretation. The UK Approach to Unmanned Aircraft Systems explains that ‘autonomous systems will in effect be self-aware . . . As such they must be capable of achieving the same level of situation understanding as a human . . . As long as it can be shown that the systems logically follow a set of rules or instructions and are not capable of human levels of situation understanding, they should only be considered automated’.²¹

The distinction that the UK makes between autonomy and automation touches on the central source of contention in the discussions on terms and definitions in 2014. There was some agreement on the generic characteristics of LAWS, the absence of human supervision or intervention, but experts and states parties found it difficult to reach a common understanding on what autonomy concretely entails, especially in contrast to automation.

¹⁸ United Nations, General Assembly, ‘Report of the Special Rapporteur on extrajudicial, summary or arbitrary executions, Christof Heyns’, A/HRC/23/47, 9 Apr. 2013.

¹⁹ Sharkey, N., ‘Automating warfare: lessons learned from the drones’, *Journal of Law, Information and Science*, vol. 21, no. 2 (2012), p. 2.

²⁰ US Department of Defense (note 11).

²¹ British Ministry of Defence (note 11).

Box 1. An overview of the competing narratives on LAWS

Based on their positions in the different debates on LAWS, states parties can be divided into four groups.

1. Supporters of a ban. Countries that already support a prohibition on LAWS: Bolivia, Cuba, Ecuador, Egypt, Ghana, the Holy See, Pakistan, Palestine and Zimbabwe.

2. Supporters of MHC. Countries that welcome MHC as a possible framework within which to discuss the governance of LAWS: Austria, Chile, Croatia, the Czech Republic, Denmark, Germany, Greece, Ireland, Japan, South Korea, Mexico, the Netherlands, Norway, Sierra Leone, South Africa, Spain, Sweden and Switzerland.

3. Established ‘Western’ military powers. Countries with significant military capabilities that do not want to rush a decision on LAWS. Since they value the military advantages offered by increasing autonomy in weapon systems, they may not want the CCW discussion to preclude technological development. As a result, they favour a continuation of the debate at the expert level for the time being. They also expressed clear reservations in the discussion on MHC. It is worth noting that it is crucial to keep these countries on board in the discussion on LAWS at the CCW, as they are likely to be among the key countries that will influence the norms and practices on autonomous weapon systems over the next three decades.

The list includes: Australia, Canada, France, Israel, the United Kingdom and the United States.

4. Other established military powers. Countries, most notably China, India and Russia, with emerging military capabilities that also value the capabilities offered by increased autonomy in weapon systems but fear that an arms race on LAWS would widen the capability gap between them and the USA. These countries were vocal about the risks that LAWS pose to strategic stability, but cautious during the two informal meetings of experts. Their statements primarily focused on how the discussion was evolving. Some stressed the need to examine the concept of MHC further, while arguing that it was unsatisfactory.

CCW = Certain Conventional Weapons (Convention); MHC = meaningful human control; and LAWS = lethal autonomous weapon systems.

The characteristics of LAWS

For Germany and France, it is essential to clarify what is ‘autonomous’ in contrast to what is ‘automatic’ or ‘automated’.²² Arguably, such a distinction is required to exclude from the discussion existing systems that have some degree of automation in their critical function, such as BONUS systems, the Brimstone missile, the Phalanx close-in weapon system and C-Ram.²³ On the other hand, some delegations expressed doubts about the ability or the need to draw a clear line between what is automated and what is autonomous. To Sweden, ‘machine automation and autonomy exist in a continuum’.²⁴

This divergence of views dominated the technical discussion in May 2014, so the chair, Germany, invited experts to address the question at the second meeting of experts in order to reconcile the different interpretations. However, in contrast to May 2014, the

line of division in April 2015 was less about whether it is possible to make a distinction between autonomy and automation, and more about whether the debate on the characteristics of LAWS should be approached from a technical or a political/normative standpoint.

For France and Germany, it was crucial to further investigate the very notion of autonomy—its technical and operational characteristics and the related implications. France repeatedly argued that one useful way to distinguish between automation and autonomy was ‘predictability’. According to this notion, automatic and automated systems operate in a structured and predictable environment. Autonomous systems, on the other hand, can function in an open environment under complex and dynamic circumstances, which makes their actions to some extent unpredictable.²⁵ To France, this unpredictability is the central source of concern.²⁶

²² Germany, ‘General statement by Germany’, CCW Meeting of Experts on Lethal Autonomous Weapons Systems, Geneva, 13 May 2014.

²³ March, N., ‘Defining the scope of autonomy: issues for the Campaign to Stop Killer Robots’, Peace Research Institute Oslo (PRIO) Policy Brief 2/14 (PRIO: Oslo, 2014).

²⁴ Sweden, ‘Remark by Sweden at the Expert Meeting on Laws at the CCW (General Debate) on 13 May 2014’, CCW Meeting of Experts on Lethal Autonomous Weapons Systems, Geneva, 13 May 2014.

²⁵ In technical terms, France stresses the difference between using determinist algorithms and non-determinist algorithms. Non-determinist algorithms introduce some unpredictability, as the operator does not always foresee exactly how a system will react to specific circumstances.

²⁶ In an interview, however, a French delegate stressed that this does not mean that France sees autonomous weapon systems as machines that are capable of free will or moral judgement. Nor does it believe that they can reach the same level of understanding as humans. Autonomous

Germany had commissioned a research project with the aim of developing a model to systematically evaluate and benchmark the level of autonomy of weapon systems. Its conclusions were presented during the expert presentations. The model proposed a multidimensional and quantitative approach to autonomy that would take account of: physical factors, such as time, space and energy; sensors, their quality, quantity and impact; weapons, their quantity, quality and capabilities; human control, steering and veto; and machine factors, such as errors, fault tolerance and self-preservation.²⁷

Experts from civil society and some delegations were of the opinion that agreement on what autonomy entails in technical terms was not essential to a continuation of the discussion. Two complementary options were proposed. First, that the discussion should focus on the tasks that raise the most concern when delegated to machines. As the International Committee of the Red Cross (ICRC) pointed out in its intervention in April 2015, and also elsewhere, it is commonly agreed that automating some operational tasks, such as navigation or reconnaissance, is not as problematic as automating the use of force.²⁸ In addition, the use of force itself can be divided into four critical steps that are not of equal concern: acquiring, tracking, selecting and attacking targets. The current status of the discussion indicates that states parties generally agree that the real matter of concern is when autonomy or automation is applied to selecting and attacking targets. Consequently, the ICRC suggested that a ‘functional approach’ to automation/autonomy would be appropriate in order to foster a consensual and constructive basis for future discussions on LAWS.²⁹

The second option, supported by the Dutch, Irish and Swiss delegations, was that the concept of ‘meaningful human control’ could provide a useful framework for advancing the understanding of the nature of LAWS (see below). This approach, however, is less a means of defining autonomy and more a framework for thinking about parameters that would make LAWS legal and

weapon systems still follow a script, they are supposed to complete a pre-assigned task; the major difference in automated systems is that they can adapt to dynamic conditions in order to implement the task.

²⁷ Dickow, M., ‘A multidimensional definition of robotic autonomy: possibilities for definition and regulation’, CCW Meeting of Experts on Lethal Autonomous Weapons Systems, Geneva, 14 Apr. 2015.

²⁸ Davidson, N., ‘Characteristic of autonomous weapons systems’, CCW Meeting of Experts on Lethal Autonomous Weapons Systems, Geneva, 14 Apr. 2015; and see UNIDIR (note 2).

²⁹ Davidson (note 28); and UNIDIR (note 2).

acceptable. It therefore begs the question: to what extent can the use of force be automated?³⁰ The Irish delegation stressed that ‘the debate should be centred in IHL and also in international human rights law and that the technical aspects of the debate, and any development of these technologies, should take place against that framework’.³¹

Legal issues

Participants at the two informal meetings of experts generally agreed that international law is applicable to the development and use of LAWS. In 2014, however, different narratives emerged on whether LAWS could be used in compliance with existing international law.

One point of division in the discussion was whether it would be technically possible for LAWS to comply with the basic requirements of IHL relating to distinction, proportionality and precaution in the use of force. The countries that support a ban believe that LAWS will never be able to adequately fulfil those requirements. Austria, Germany, the Netherlands, Sweden and Switzerland raised serious doubts about whether this would ever be possible, without ruling out such a possibility. France, the UK and the USA indicated that it is too early to say because it is impossible to foresee how technology will evolve. In their view, the compatibility of LAWS with IHL will be determined by future technological developments. The Czech Republic and Israel were the only two countries to openly state that a machine might possibly be better than a human at applying the principles of distinction, proportionality and precaution in attack.

Several panellists and several states parties, most notably Israel and the USA, stressed that the lawfulness of LAWS would be conditional on multiple factors, most importantly the context of use and the type of mission. In this regard, the role of the legal reviews required under Article 36 of Additional Protocol I to the 1949 Geneva Convention received a great deal of attention in 2015.³²

³⁰ United Nations Institute for Disarmament Research (UNIDIR), *The Weaponization of Increasingly Autonomous Technologies: Considering How Meaningful Human Control Might Move the Discussion Forward* (UNIDIR: Geneva, 2014), <<http://www.unidir.org/files/publications/pdfs/considering-how-meaningful-human-control-might-move-the-discussion-forward-en-615.pdf>>.

³¹ Ireland, ‘Statement by Jacqueline O’Halloran Bernstein’, CCW Meeting of Experts on Lethal Autonomous Weapons Systems, Geneva, 14 Apr. 2015.

³² Article 36 states: ‘In the study, development, acquisition or adoption of a new weapon, means or method of warfare, a High

The ICRC and other academic institutions, as well as several delegations such as Germany, the Netherlands, Switzerland and the USA, stressed that Article 36 reviews are the only instrument that can ensure that LAWS are developed, produced, fielded and used in compliance with the requirements of international law.³³ Weapon review commissions commonly have the ability to impose restrictions and conditions on how weapons can be developed, produced, fielded and used.

The NGOs from the Campaign to Stop Killer Robots, as well as China and India, welcomed the discussion on weapon reviews but also expressed clear reservations. The NGOs fear that the focus on Article 36 is a way for major military powers to shy away from fundamental ethical questions, such as whether it would acceptable to delegate the decision to take life to machines. China and India pointed out in their statements that Article 36 reviews are national procedures beyond any kind of international oversight, and that there is very little transparency about how methods and criteria are applied to ensure that weapons comply with international law. They noted the risk of inconsistency in the way that national review procedures interpret the law, and consequently feared that Article 36 reviews might not be sufficient to effectively prevent the development, production, fielding and use of LAWS.

In response to these criticisms, states that value the importance of Article 36 reviews acknowledged that LAWS might pose significant and possibly unique challenges for the review processes. Based on their normal intended circumstances of use, LAWS might be able to autonomously select and attack targets with little or no input from a human operator. Any assessment of their lawfulness would therefore need to comply with the rules of IHL on targeting. Switzerland underlined the fact that significant technical resources and extensive experiments might be needed to make

Contracting Party is under an obligation to determine whether its employment would, in some or all circumstances, be prohibited by this protocol or by any other rule of international law application to the High Contracting Party.' Article 36 of Protocol I Additional to the 1949 Geneva Conventions, Relating to the Protection of Victims of International Armed Conflicts, 8 June 1977, <<https://www.icrc.org/applic/ihl/ihl.nsf/4e473c7bc8854f2ec12563f60039c738/feb84e9c01ddc926c12563cd0051daf7>>.

³³ This is also the position expressed by Russia in an interview with SIPRI. For Russia, there are 'already barriers on the way to development of such systems in future: legal weapons reviews and laws of humanity and requirements of the public conscience referred to in the Fyodor Martens clause', Russian Ministry of Foreign Affairs, Written answers, 15 July 2014.

such assessments.³⁴ States will have to develop and perform complex test and risk-analysis procedures to predict the compliance of LAWS with IHL, and also to evaluate the risks of unintended harm in a case of system malfunction or unintended loss of control, for instance, caused by a cyber attack or a programming error.

Moreover, states might not be equally well equipped to deal with this technical challenge. Most countries still have to develop national review procedures 'from scratch', and those that have procedures in place may have to adapt them to include the relevant expertise and resources to make their assessment.³⁵ There are currently no international standards on how the procedure should review the risks associated with autonomous features in weapon systems.

In the light of the above, Germany, Sweden, Switzerland and the USA stressed that it might be useful for states parties to share information and lessons learned on weapon review procedures, and engage in a discussion with a view to producing a best practice document.

The question of whether LAWS might create a responsibility and accountability gap was another major contentious issue. The question emerged in 2014 but remained unresolved in 2015. States parties responded differently to this question and to the role of military command in the use of force.

In France and Germany's view, LAWS might raise a fundamental problem regarding individual criminal responsibility. Without further clarification, LAWS could create a legal vacuum in the sense that it would be difficult to determine who or what was accountable in cases of violations of IHL: the machine, the programmers, the producer, the military commander who ordered the mission or the military operator in charge of oversight.

For Ireland and Sweden it is beyond dispute that, in the final analysis, states are responsible for the use of weapons in war, regardless of whether the weapons are 'autonomous' or the decision to use force is dispersed among a growing number of actors. According to this view, it would be useful if states could be more transparent about how they apply an unequivocal

³⁴ Switzerland, 'Possible challenges to international humanitarian law due to increasing degree of autonomy', CCW Meeting of Experts on Lethal Autonomous Weapons Systems, Geneva, 15 Apr. 2015.

³⁵ The states with procedures in place include: Australia, Belgium, France, Germany, the Netherlands, Norway, Russia, Sweden, the UK and the USA.

accountability chain in the deployment of a weapon system.

The UK and the USA made a small step in this direction in 2015 when they presented the process and the key rules they apply to targeting. They stressed that there is always a human accountable at each step of the targeting process.

Ethical issues

The question of whether it would be morally acceptable to delegate the right to take life to a machine was central to the ethical debate. In May 2014 three different positions emerged from the discussion.

Some states—Austria, Germany, Ireland, the Netherlands and Sweden—indicated that, as a starting point, they refuse to delegate the decision to use force against a human to a machine. This stance was supported during the expert discussion by a US philosopher, Peter Asaro, who explained that IHL and international human rights law contain rules that implicitly require human decisions regarding the use of force. He argued that machines are unable to assess the value of human life and make the moral judgements necessary to respect these rules.³⁶

The Czech Republic and Israel, on the other hand, argued that there might be a moral imperative to use LAWS in some circumstances. They stressed that LAWS could possibly behave more ethically in combat than humans because they would have no emotions: they would not experience fear, stress or tiredness; and they would not act out of anger, revenge or cruelty. They would also be moral because they could perform better than a human with respect to the principles of distinction, proportionality and precaution. A US roboticist, Ronald Arkin, defended this utilitarian view of ethics in the expert discussion.³⁷ He argued that the development of ethically governed robots would ultimately reduce the level of suffering and the number of military and civilian casualties on the battlefield.

A third view is that the ethical debate cannot be reduced to an all-or-nothing discussion. States parties such as France and the USA see ethical considerations

as absolutely essential but highly complex and requiring further consideration. Arguably, the ethical question is larger than the question of delegating the decision to use force to a machine. For instance, ethical concerns also arise with regard to rescue: would it be ethical to delegate to a machine the ability to decide who to save and who to treat? The machine would have to make the same kind of assessment as for killing, and weigh factors such as proportionality and distinction. The USA also highlighted that it was premature to draw firm ethical conclusions, since the nature of LAWS was still unclear. According to this view, the acceptability of LAWS will evolve over time as technologies evolve and produce new capabilities. It will also depend on societal considerations—on what people are ready to accept in the civilian sphere.

These three positions were reiterated at the second informal meeting of experts, where there was a longer discussion on ethical issues. This discussion took place in a session on ‘overarching issues’, which conflated to some extent legal concerns and ethics. The panellists considered, in particular, protecting the right to life and the right to dignity, the application of the Martens Clause, and the situations in which LAWS could be used for law enforcement and non-lethal purposes.³⁸ Greece suggested that the question of whether to ban LAWS was first and foremost an ethical issue rather than a legal one. NGOs and a handful of countries—Cuba, Ecuador, Egypt, the Holy See and Pakistan—argued for a pre-emptive ban based on the conclusion that delegating the decision to kill a human would be fundamentally immoral. The majority of delegations that spoke at the second informal meeting of experts, however, indicated that it was premature to draw any conclusions on the matter.

Meaningful human control as a possible framework for discussion

The legal and ethical discussions triggered substantial discussion on human control in relation to the use of force. A wide range of stakeholders saw the need to maintain an ‘appropriate’ or ‘effective’ level of human control or human judgement over the decision

³⁶ Asaro, P., ‘Ethical questions raised by military applications of robotics’, CCW Meeting of Experts on Lethal Autonomous Weapons Systems, Geneva, 14 May 2014. See also Asaro, P., ‘On banning autonomous weapon systems: human rights, automation, and the lethalization of lethal decision making’, *International Review of the Red Cross*, no. 886, 30 June 2012.

³⁷ Arkin, R., ‘LAWS and the plight of a noncombatant’, CCW Meeting of Experts on Lethal Autonomous Weapons Systems, Geneva, 14 May 2014.

³⁸ The Martens Clause states that where the rules governing a military activity are not specifically laid down, the activity is governed by ‘the principles of international law, as they result from the usages established between civilized nations, from the laws of humanity and the requirements of the public conscience’. On the Martens Clause see Ticehurst, R., ‘The Martens Clause and the laws of armed conflict’, *International Review of the Red Cross*, no. 317, 30 Apr. 1997.

to use force. The concept of ‘meaningful human control’ (MHC), originally coined by the NGO Article 36, was the most frequently used. At the second informal meeting of experts in 2015, 18 delegations made direct reference to it in their interventions in the general debate or as part of the discussion on the ethical and legal challenges raised by the possible use of LAWS.³⁹ The question of whether the concept of MHC—or similar concepts—could serve as a possible framework for future discussion was raised but became a matter of contention.

A report by the UN Institute for Disarmament Research (UNIDIR) and statements by several delegations, including from the Netherlands and Switzerland, pointed out that the notion of MHC has many advantages.⁴⁰ First and foremost, it is an intelligible—that is colloquial and non-technical—and comprehensive concept that tackles the most essential issues related to the use of LAWS. It reflects what is seen by many to be an implicit requirement of IHL for a degree of human judgement in the decision-making process, not least in order to be able to assign responsibility. It can satisfy the ethical and human rights imperative, in respect of the right to life and the right to dignity, of not entirely delegating a decision on the use of lethal force to a machine. It is also broad enough to take into consideration issues related to the Martens Clause and the dictates of public conscience. Thus, the notion of MHC might reflect a consensual principle that most states could agree on.

Even states parties to the CCW that do not exclude the technical possibility of developing LAWS that comply with IHL acknowledge the need to maintain some degree of human control over the use of all weapon systems. Military experts stress that there is no particular interest in the military in weapon systems that can decide to engage autonomously. Historically, the driver for the development of new military technology has been the opposite—the need to improve and expand the degree of control by the military command over the use of force. Promoting MHC as a principle for the use of force could also have a virtuous effect on technological innovation. It might encourage states and engineers to focus their research and development efforts on how to improve human control

³⁹ The 18 delegations were: Argentina, Austria, Brazil, Chile, Croatia, the Czech Republic, Denmark, Ecuador, Germany, Ireland, Japan, South Korea, Mexico, the Netherlands, South Africa, Spain, Sweden and Switzerland.

⁴⁰ UNIDIR (note 30).

over the use of lethal force, rather than removing human operators from the decision-action loop.

Nonetheless, MHC as a concept for framing discussion also has its limitations. ‘Meaningful’ is an intrinsically subjective notion and ‘human control’ can also be interpreted in multiple ways—in, on or out of the decision-action loop. States have not yet elaborated specific parameters or suggested any threshold test deemed necessary for human control to manage technological change. Consequently, some major actors at the CCW expressed strong reservations about the concept of MHC in 2014 and 2015. India warned against a ‘rush to judgement on MHC’, arguing that the term needs further clarification.

For the USA, the concept of MHC is inadequate for discussing the whole spectrum of activities and situations that LAWS might be dealing with. Meaningful is a vague term that is open to overly subjective interpretation and the notion of control might not fit with situations in which humans are not in a position to directly intervene in the decision-action loop. The USA instead suggested talking about an ‘appropriate level of human judgement’, indicating its wish for further expert discussion on human-machine interactions. France also expressed clear reservations about whether MHC could be a useful framework for discussing the governance of LAWS. It questioned how the concept could be operationalized and, more specifically, challenged the very notion of meaningful. France proposed a focus on what autonomy entails in weapon systems, most notably on the problem of predictability.

Supporters of the concept acknowledged the value of clarifying and perhaps narrowing the scope of the discussion on MHC. In this regard, the question of how to operationalize control will be fundamental to further discussion. Three important questions would require clear answers. What is the objective of control? How will control be applied? What would constitute ‘meaningful’, ‘effective’ or ‘appropriate’ control? Delegates stressed that these terms have no clear meaning in themselves and states will have to articulate them in relation to specific operational requirements or ‘ethical goals’—that is, what it is deemed acceptable for a machine to do.

Even if MHC remains a polarizing concept, the majority of states seem to agree that a weapon system that uses force autonomously without any human control should be considered unacceptable. The report submitted by the chair of the second informal meeting

of experts, Ambassador Michael Biontino, noted that ‘certain areas of common understanding emerged from the discussion, including a rejection of fully autonomous weapons systems deciding over the use of force against humans without human intervention’.⁴¹

Two-thirds of the states that made a statement during the second meeting of experts stressed, directly or indirectly, the need to maintain human control over the decision to use force against a human being, based on ethical, legal or operational considerations. Seventeen states made direct references to the concept of MHC. China, France, India and the USA explained that they did not wish to see the decision to use force escape human control or judgement, while Russia affirmed the ‘unacceptability of losing control’.

This means that the concepts of meaningful, effective or appropriate human control could provide a basis for discussion on defining a normative framework for controlling the use of LAWS. It should also be underlined, however, that many states remained silent during the discussion, and their silence should not be taken as endorsement.

The outcome of the discussion

In terms of the outcome that states are seeking to achieve, the current mandate of the CCW with respect to autonomous weapons remains unclear. In the sessions dedicated to ‘the way forward’ in 2014 and 2015, the majority of states appeared to agree that it was premature to start discussions on the negotiation of a protocol on LAWS. Only a handful of states clearly and openly supported such a possibility. Bolivia, Cuba, Ecuador, Egypt, Ghana, the Holy See, Pakistan and Palestine called for prohibition, while Croatia, Ireland and Sri Lanka stressed that a treaty regulating or banning LAWS should remain on the table for consideration.

In 2014, Austria proposed a moratorium on the testing and development of LAWS as an interim measure. It called on all states engaged in the development of LAWS to freeze existing programmes and asked those considering starting such development to refrain from doing so. Spain responded that a proposal for a moratorium would be premature without a collective definition of its scope and application. France expressed clear opposition, arguing that such

⁴¹ Biontino, M., ‘Report of the 2015 Informal Meeting of Experts on Lethal Autonomous Weapon Systems’, <<http://www.genf.diplo.de/contentblob/4567632/Daten/5648986/201504berichtexpertentreffenaws.pdf>>, p. 26.

a moratorium would hamper research on the civil applications of autonomous systems, given that the technologies involved are inherently dual-use. If the proposition for a moratorium was not extensively discussed in 2015, many countries, including top-tier arms producers such as Canada, France, Germany, Japan and the UK, stressed that they were not developing LAWS and did not intend to do so. Reportedly, Israel and the USA are the only two countries keeping their options open on the acquisition of fully autonomous weapon systems.⁴²

As chair of the second informal meeting of experts, Germany stressed the importance of transparency efforts to move the discussion forward, devoting a whole subsession to the topic. It received the support of a handful of states that also stressed the value of transparency in their national statements: Ireland, the Netherlands, Sweden, Switzerland and, to some extent, the USA. The states made concrete proposals, for example, publishing national procedures on legal weapon review processes according to Article 36 of Additional Protocol I; exchanging information on those procedures; introducing controls on the international transfer of autonomous technology in order to prevent proliferation and misuse by non-state actors; developing a set of best practices or a political declaration as an interim measure; establishing national points of contact; and sharing additional information.

Some states, including China, India and Russia, however, argued that it was premature to talk about transparency at this stage, as there was still no basic common understanding of what LAWS are. Russia, in particular, raised doubts about whether states would agree to share information on their weapon programmes.

III. THE WAY FORWARD

Continuing the discussion in 2016

Another informal meeting of experts

At the Meeting of the High Contracting Parties to the CCW in November 2015, there was a clear consensus that the issues surrounding LAWS needed to be debated further but no agreement on how this should

⁴² Wareham, M., *Report on Activities: CCW Second Informal Meeting of Experts on Lethal Autonomous Weapons Systems* (Campaign to Stop Killer Robots: Washington, DC, June 2015).

be done. Some states, such as Germany, Ireland, Poland and Switzerland, supported the creation of a Group of Governmental Experts (GGE) in 2016. Others, most notably France, the UK and the USA, saw this as premature. They indicated that they would rather renew the current mandate with a view to negotiating the creation of a GGE mandate at the Fifth Review Conference in December 2016.

Consensus was eventually reached on renewal of the mandate and the organization of a third informal meeting of experts in April 2016. Discussion of the creation of a GGE was tentatively postponed to the Fifth Review Conference. The renewed mandate includes an additional element: the April meeting ‘may agree by consensus on recommendations for further work for consideration by the 2016 Fifth Review Conference’.

Ambassador Michael Bontino, Germany’s permanent representative to the Conference on Disarmament, was again appointed chair. It will be a major challenge for the chair to prevent the third informal meeting of experts from simply repeating the same spectrum of views as were presented during the two previous meetings in 2014 and 2015. Ideally, it should build a common understanding on the key issues at stake, and on terms of reference and definitions, so it can make concrete recommendations for consideration at the Review Conference. The annotated programme of work for the meeting promises constructive discussions, as it focuses on the essential overarching issues: technical, legal, ethical and security.

The first technical session will map current developments concerning autonomous systems in general. It will include presentations on current developments in the civilian and military sphere and case studies on maritime, aerial and terrestrial autonomous systems. These presentations should give delegations a ‘reality check’ regarding the capabilities of autonomous systems now and in the foreseeable future, and hence help to anchor the discussions on LAWS to concrete ground.

The second session is intended to pave the way for a working definition of LAWS by exploring the operationalization of existing technical or legal approaches to the concept. The session will review the concepts that are commonly associated with these approaches to see how they could fit into a practical definition. Such concepts include: ‘critical function’, ‘autonomy’, ‘predictability’, ‘indicator-based approaches’, ‘MHC’ and ‘human judgement’.

The third session, on the challenge to IHL, will focus to a large extent on the implementation of Article 36 reviews and the challenges, including technical ones, posed by LAWS to such processes.⁴³ Given that many delegations do not want to rule out the possibility that technical developments will one day make it possible for LAWS to comply with IHL, the value of Article 36 reviews cannot be stressed highly enough. Sound Article 36 reviews are key instruments in ensuring that weapon systems are fielded and used in compliance with IHL. As these legal reviews are conducted at the national level, it will be essential to build confidence among states and identify best practices and possibly some standards for the review of weapons that contain automatic or autonomous elements. Combined with transparency initiatives for weapon review processes, these standards would ensure that countries are adequately meeting their national obligations and that any autonomous weapon systems that are developed are in compliance with international law.

The session on IHL will also tackle the issue of criminal responsibility in cases of IHL violations. Information sharing on how states ensure accountability at the national level for the application of violent force would be particularly informative. It would be very valuable for the discussion if the presentations could explain how responsibility is assessed and assigned between the operator, the military command and the developer of a system in cases of IHL violations, especially when remote-operated weapons and automatic weapons are being used. This type of information would be invaluable in identifying the types of compliance and verification mechanism that might be applicable to LAWS.⁴⁴

The session dedicated to human rights and ethical issues may focus on different scenarios and investigate, in more detail, the social acceptance of autonomous systems in general and in the military sphere in particular. Law-enforcement issues are beyond the scope of the CCW, but discussions on how autonomous systems might be used in such contexts would nonetheless be relevant, given that the military is becoming increasingly involved in police

⁴³ For a detailed account of the challenges posed by automation to Article 36 legal reviews, see Boulain V., ‘Implementing Article 36 weapon reviews in the light of increasing autonomy in weapon systems’, SIPRI Insights on Peace and Security no. 2015/1, Nov. 2015.

⁴⁴ Arguably, LAWS that are fully autonomous (not under any form of human control) may require the introduction of new legal instruments as a machine cannot be held responsible.

operations as part of peacekeeping operations. Soldiers deployed in peacekeeping operations might have to quickly shift from a law-enforcement paradigm to a conduct-of-hostilities paradigm. Therefore, it will be important to have further discussions about the extent to which these paradigm shifts might be problematic if autonomous systems were used in one context or the other.

The final session will address security concerns, most notably the risk of regional and global destabilization due to the deployment of LAWS; proliferation risks, including acquisition and use by non-state actors; and, more importantly, the military value and risk of the deployment of LAWS in different scenarios. The last point is crucial as the usefulness, legality and acceptability of LAWS will largely depend on the context of their use. The desirability of LAWS in the military sphere is contested and it would be useful to hear from military experts about the extent to which they would be ready to delegate control over the use of force to a machine.

The creation of a GGE

A five-day meeting will not be sufficient to resolve all the contentious issues that surround LAWS. More sustained discussions will be needed to narrow the gap between the different positions of states parties, and the creation of a GGE at the Fifth Review Conference in December 2016 could be a way forward.

A GGE provides many advantages: the format would increase the interaction between states parties and allow them to spend more time investigating issues of substance. Should it lead to a negotiated text, states parties would give higher priority to the issue and dedicate more resources and personnel to it. As an intergovernmental dialogue, a GGE would also compel states to distil and communicate their national positions.

States parties should not have any difficulty discussing the format of a GGE. Established practice is to make it open-ended and allow states parties, observer states, registered NGOs and academic institutions to attend. The states interviewed by SIPRI indicated that they remained flexible with regard to how often and how long such a GGE should meet. They stressed that the most important requirement was to increase the frequency of interaction between states parties.

On the other hand, the question of the mandate of a GGE might be contentious. The current status

of the discussion indicates that a number of states parties, most notably the major military powers, will be resistant to a mandate that paves the way for a new protocol regulating or banning the development, production or use of LAWS—an outcome that is actively supported by the Campaign to Stop Killer Robots. Given the current level of understanding of the issues among states parties, the initial mandate of a GGE is likely to focus on the substance, and investigate further the range, of the issues that have been identified at the three informal meetings of experts: (a) the characteristics of LAWS; (b) legal issues; (c) ethical issues; and (d) operational and security considerations. The conclusions of such a GGE could then serve as a basis for considering whether a protocol on LAWS should be discussed formally under the CCW. The GGE could also make useful recommendations on best practices and standards for weapon reviews, and on transparency.

IV. KEY RECOMMENDATIONS TO THE EU AND ITS MEMBER STATES

The statements made at the CCW thus far by the EU's delegation have been limited to supporting a continuing discussion on the topic, in order to facilitate a common understanding on LAWS. The EU has not been able to take a clear stance on the debate due to the lack of a common perspective among its member states—most of which are still in the process of developing their own positions.

In many respects, it is still premature for the EU to seek a common position on LAWS. Its member states, which have not yet developed a clear line of thinking, need first to be given the space and time to forge their own positions independently. Rushing to a common position would risk the discussion at the EU level being monopolized or influenced by a small number of states. However, it would be in the interests of the EU to help its member states in their efforts to get a clear picture of the debate, as this would help them to formulate policy.

Information sharing and dialogue

As a starting point, the EU could make a meaningful contribution by encouraging transparency and information-sharing measures, which could help structure the dialogue among its member states. An initial transparency action plan, coordinated by the

European External Action Service (EEAS), might include the following two measures.

First, the creation of focal points and/or points of contact within government. Focal points would take responsibility for reaching out to different agencies and authorities at the national level, and points of contact would be where other states could turn with questions or to gain access to available information.

Second, a system to make available existing documents that constructively support the discussion on LAWS at the CCW. This would include official documents outlining national positions and documents related to relevant subtopics. Documents related to weapon reviews would be of particular interest as they could present national weapon review procedures and highlight, where possible, the methodologies used to assess those technologies with automated or autonomous features. This would significantly help states parties to identify the best practices and standards that might be useful in legal reviews of autonomous weapon systems. Documents outlining the standard operating procedures of weapon systems and targeting rules would also be constructive for the discussion on MHC, helping to identify possible parameters for operationalizing the concept, as well as compliance and verification mechanisms.

Capacity building

The EU could also support capacity building in the area of weapon reviews. The UK, for example, created a weapon review forum in 2015, where government representatives discussed the identification of best practices and standards for the implementation of Article 36 of Additional Protocol I to the 1949 Geneva Convention. The EU could ask the European Defence Agency (EDA) to use the forum's recommendations and elements of best practices proposed elsewhere to develop a capacity-building initiative within the framework of the EDA's Capabilities Development Plan. This would support EU member states that have not yet set up a formal weapon review mechanism.⁴⁵

Such a capacity-building programme could also support member states that wish to improve their existing weapon review mechanisms. This could take the form of technical training for military lawyers

⁴⁵ Boulain (note 43); and International Committee of the Red Cross, *A Guide to the Legal Review of Weapons, Means and Methods of Warfare* (ICRC: Geneva, 2006).

who wish to enhance their understanding of trends in technology development, or capacity building in the area of test and verification procedures for complex weapon systems.

Research

The EU could commission studies that would help its member states to develop, refine or reconsider their views on LAWS. For example, the EU could task the EDA with funding mapping studies of EU capabilities in relevant technology areas. One study could map the different types of weapon system that are currently being developed—both within the EU and by major international powers—that either currently, or may in the future, include some level of autonomy. Another study could map civil innovation in the field of artificial intelligence and advanced robotics that might have strategic relevance, including the commercial implications of continuing or discontinuing support. Such studies would help member states to understand what these technologies are and how they operate.

Ahead of future export control policy reviews, the European Commission could encourage research on whether existing export controls should apply in the area of autonomous systems, and how. Since autonomy in weapon systems relies on dual-use technology—most notably software and algorithms—that can be found in the civilian sector and could easily be reproduced, it is feared that rogue states or non-state actors could easily access the necessary technology to develop 'dirty' autonomous weapons—or weapons that would not meet the legal requirement for use. The EU could support research on the likelihood and feasibility of non-state actors accessing and using autonomous technology, as well as an evaluation of the potential impact of tighter controls on the export of civilian robotics technologies.

Further, the EU could support academic and policy research on the legal, ethical, sociological and military aspects of increasing autonomy in weapon systems. This could be done through its own framework programme for research and innovation, Horizon 2020.

V. CONCLUSIONS

The discussion on LAWS at the CCW is still at an early stage, although some progress has been made towards achieving a greater common understanding of the issues at stake. The competing narratives on every aspect of the discussion that emerged in 2014

crystallized in 2015. Thus, extended discussions will be necessary to resolve contentious issues and generate a constructive basis for any potential formal negotiation. All parties seem to agree that the debate should continue. The third informal meeting of experts in April 2016 will be an occasion for states to further develop their understanding of the issues at stake and make recommendations for how these should be addressed at the Fifth Review Conference in December 2016.

The EU has not yet been able to take a clear stance on the debate due to the lack of a common perspective among its member states. An EU common position would carry more weight at the CCW, but it cannot be achieved overnight. A large number of EU member states have not yet developed a position on the issue or even formally engaged in the discussion on the topic at the CCW. Further, the states that are the most active in the discussion have diverging views on all aspects of it.

There is a clear impetus for the EU to implement measures that will foster discussion and ultimately narrow the gap between the positions of member states. These include providing a structured framework for information sharing, supporting capacity building and supporting research in relevant areas.

ABBREVIATIONS

CCW	Certain Conventional Weapons (Convention)
EDA	European Defence Agency
EU	European Union
GCE	Group of Governmental Experts
ICRC	International Committee of the Red Cross
IHL	International humanitarian law
LAWS	Lethal autonomous weapon systems
MHC	Meaningful human control
NGO	Non-governmental organization
UNIDIR	United Nations Institute for Disarmament Research



This document has been produced with the financial assistance of the European Union. The contents are the sole responsibility of the EU Non-Proliferation Consortium and can under no circumstances be regarded as reflecting the position of the European Union.

A EUROPEAN NETWORK

In July 2010 the Council of the European Union decided to create a network bringing together foreign policy institutions and research centres from across the EU to encourage political and security-related dialogue and the long-term discussion of measures to combat the proliferation of weapons of mass destruction (WMD) and their delivery systems.

STRUCTURE

The EU Non-Proliferation Consortium is managed jointly by four institutes entrusted with the project, in close cooperation with the representative of the High Representative of the Union for Foreign Affairs and Security Policy. The four institutes are the Fondation pour la recherche stratégique (FRS) in Paris, the Peace Research Institute in Frankfurt (PRIF), the International Institute for Strategic Studies (IISS) in London, and Stockholm International Peace Research Institute (SIPRI). The Consortium began its work in January 2011 and forms the core of a wider network of European non-proliferation think tanks and research centres which will be closely associated with the activities of the Consortium.

MISSION

The main aim of the network of independent non-proliferation think tanks is to encourage discussion of measures to combat the proliferation of weapons of mass destruction and their delivery systems within civil society, particularly among experts, researchers and academics. The scope of activities shall also cover issues related to conventional weapons. The fruits of the network discussions can be submitted in the form of reports and recommendations to the responsible officials within the European Union.

It is expected that this network will support EU action to counter proliferation. To that end, the network can also establish cooperation with specialized institutions and research centres in third countries, in particular in those with which the EU is conducting specific non-proliferation dialogues.

<http://www.nonproliferation.eu>

EU NON-PROLIFERATION CONSORTIUM

The European network of independent non-proliferation think tanks

FONDATION
pour la RECHERCHE
STRATÉGIQUE

FOUNDATION FOR STRATEGIC RESEARCH

FRS is an independent research centre and the leading French think tank on defence and security issues. Its team of experts in a variety of fields contributes to the strategic debate in France and abroad, and provides unique expertise across the board of defence and security studies.

<http://www.frstrategie.org>

PRIF  **HSFK**
Peace Research Institute Frankfurt Hessische Stiftung Friedens- und Konfliktforschung

PEACE RESEARCH INSTITUTE IN FRANKFURT

PRIF is the largest as well as the oldest peace research institute in Germany. PRIF's work is directed towards carrying out research on peace and conflict, with a special emphasis on issues of arms control, non-proliferation and disarmament.

<http://www.hsfk.de>

 IISS

INTERNATIONAL INSTITUTE FOR STRATEGIC STUDIES

IISS is an independent centre for research, information and debate on the problems of conflict, however caused, that have, or potentially have, an important military content. It aims to provide the best possible analysis on strategic trends and to facilitate contacts.

<http://www.iiss.org/>

 sipri

STOCKHOLM INTERNATIONAL PEACE RESEARCH INSTITUTE

SIPRI is an independent international institute dedicated to research into conflict, armaments, arms control and disarmament. Established in 1966, SIPRI provides data, analysis and recommendations, based on open sources, to policymakers, researchers, media and the interested public.

<http://www.sipri.org/>