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Laws on LAWS (Lethal Autonomous Weapon Systems): The Work of the United Nations and the Swedish Position

1 Introduction

This contribution deals with Artificial Intelligence (AI) in the context of the law in war, or international humanitarian law (IHL). The development of AI has made possible a high degree of automation of weapon systems. Today, some weapon systems are even called ‘autonomous’. Many fear that legally irresponsible and unaccountable machines – or robots – will henceforth make and execute arbitrary decisions over the life and death of human beings.¹ Through international legal regulation, this development could perhaps be forestalled, they hope. We will see how the issue of the normative regulation of so-called lethal autonomous weapon systems (LAWS) is approached at the global level in the United Nations (UN) as well as at the national Swedish level.

It is not easy for the states of the world to reach agreement on what specific normative regulation, if any, should apply to the emerging and important phenomenon of LAWS. Moreover, weapons development is usually something that the states, who are able to produce them, often want to be left as little regulated as possible. In this contribution, we will see what has been achieved so far and what may be achieved in the future.

¹ See, for instance, the Stop Killer Robots campaign, <<https://www.stopkillerrobots.org>> accessed 28 September 2021.

Some legal questions that arise in the global debate on the regulation of LAWS are whether the (old) international humanitarian law is at all applicable to the (new) phenomenon of autonomous weapon systems. Also, if so, how the existing international law should be applied and whether the existing body of law is sufficient or needs to be complemented by additional rules specific to the field of LAWS. If the existing law in war needs to be complemented, the issue arises as to what the content and form should be of the potential new international rules. And by the way, what exactly are 'LAWS', and what is an 'autonomous' weapon, really?

These are big, fundamental and difficult questions for the international community to solve. The current fierce geopolitical struggles do not make the effort less difficult, and simultaneously the tense international relations make the need for an agreement more urgent. This contribution introduces the unfolding international normative work on providing a solution.

There are four fundamental principles of international humanitarian law that will be referred to several times in this article because of their importance for the debate on LAWS. These are the principles of distinction, proportionality, precaution and the principle of not causing superfluous injury or unnecessary suffering. For the sake of clarity, these principles will be presented here very briefly. According to the principle of distinction, the parties to an armed conflict shall distinguish between combatants and the civilian population and shall direct their operations only against military objectives.² According to the principle of proportionality, any incidental loss of civilian life or damage to civilian objects shall not be excessive in relation to the concrete and direct military advantage anticipated by the attack.³ The principle of precaution stipulates that those who plan or decide upon an attack shall take all feasible precautions, with a view to avoiding incidental loss of civilian life and damage to civilian objects.⁴ In the relationship between combatants, finally, according to

² See Protocol Additional to the Geneva Conventions of 12 August 1949 and relating to the Protection of Victims of International Armed Conflicts (Protocol I), 8 June 1977, Article 48. The author wishes to thank the Torsten Söderberg Foundation for making the writing of this contribution possible through grant number RT2/19 *Krigets juridik i den svenska regeringsformen: ett rörligt mål* (The law of war in the Swedish Instrument of Government: a moving target). All translations to English are made by the author.

³ See Additional Protocol I, *ibid.*, Article 51 (5) (b); see also Article 57 (2) (a) (iii), and Article 57 (1).

⁴ See Additional Protocol I, *ibid.*, Article 57 (2) (a) (ii); see also Article 57 (1).

the fourth principle, it is prohibited to employ methods of or means of warfare of a nature to cause superfluous injury or unnecessary suffering.⁵

2 LAWS and the Group of Governmental Experts (GGE)

Lethal autonomous weapon systems (LAWS) are intensely discussed, but there is no generally accepted definition of what they are. The central point is that they can function without human intervention. However, the question is where the line should be drawn between a highly automated system – which is not subject to discussion within the framework of LAWS – and an autonomous system – which is the subject of discussion within LAWS. With respect to a technical system, the terms automatic and autonomous mean the same thing, that is, the system works without human influence. A technical system can have many automated functions, and a complex system with many automated functions is often labelled autonomous.⁶

Depending on what definition of LAWS one uses – a definition that sets the degree of automation so high that no such weapon system yet exists or a definition that stipulates a lower degree of automation for a weapon system to be labelled ‘autonomous’ – LAWS can be claimed not to exist today or to exist already. It is uncontroversial to claim that there are weapon systems today with highly automated – or autonomous – functions, without these weapon systems necessarily being subject to discussion within the framework of LAWS. Weapons with certain autonomous functions have existed for more than 100 years. The most common highly automated – or autonomous – weapon systems today are different kinds of targeting robots, which were first put into use during and after the Second World War. Different forms of air defence systems with highly automated – or autonomous – functions also exist, for instance.⁷ Probably, the discussion on LAWS relates to weapon systems that do not

⁵ See Additional Protocol I, *ibid.*, Article 35 (2).

⁶ Cf. *Slutrapport: Arbetsgruppen om autonoma vapensystem* (Final report: The working group on autonomous weapon systems), November 2016, Ministry for Foreign Affairs, on file with author.

⁷ Cf. *Dödliga autonoma vapensystem: Rapport till Folkkräts- och nedrustningsdelegationen* (Deadly Autonomous Weapon Systems: Report to the International Law and Disarmament Delegation, Ministry for Foreign Affairs), 25 May 2020, on file with author.

yet exist, but that might soon be brought into existence due to the rapid technological development in the field of AI.

All weapons can be used incorrectly without the weapon itself necessarily being regarded as illegal. Concerning LAWS, a key issue has been whether autonomous weapon systems are able to take into account and apply the fundamental rules of international humanitarian law (IHL), i.e. what is often referred to as the laws in war or the *jus in bello*. If LAWS are inherently unable to take into account and apply the fundamental rules of IHL, then the presumption would be that LAWS in themselves are illegal. Inversely, if LAWS are able to take into account and apply the fundamental rules of IHL, then LAWS would not be inherently unlawful.

Since 2014, the issue of LAWS has been dealt with in the United Nations (UN) within the framework of 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).⁸ Before that, the issue had been brought up before the UN Human Rights Council (HRC) by the UN Special Rapporteur on Extrajudicial, Summary or Arbitrary Executions.⁹ The UN Special Rapporteur was concerned about the arbitrariness involved in using drones to target non-state actors and how that challenge could be compounded by the use of autonomous technologies.¹⁰ Specifically, the UN Special Rapporteur used the concept of lethal autonomous robotics (LAR), defined as ‘weapon systems that, once activated, can select and engage targets without further human intervention’.¹¹ Moreover, the Special Rapporteur observed that LARs add a new dimension to the distance that modern technology – for societies with access to it, he points out – allows to be put between weapons users and the lethal force they project.¹² In addition to being physically removed from the kinetic action, the UN Special Rapporteur writes that humans would also become more detached from decisions to kill and from the execution of the decisions to kill.¹³ In one

⁸ Adopted 10 October 1980, 125 States Parties.

⁹ Christof Heyns, Report of the Special Rapporteur on Extrajudicial, Summary or Arbitrary Executions, UN Doc. A/HRC/23/47, 9 April 2013.

¹⁰ Ibid., passim.; cf. also Amandeep S. Gill, “The changing role of multilateral forums in regulating armed conflict in the digital age”, *International Review of the Red Cross* (2020), p 261–285, 276.

¹¹ Heyns, *supra* note 9, Summary.

¹² Ibid., paras. 26–27.

¹³ Ibid., para. 27.

of his conclusions, the Special Rapporteur finds that if left too long to its own devices, the matter of life and death will, quite literally, be taken out of human hands.¹⁴ Moreover, coming on the heels of the problematic use and contested justifications for drones and targeted killing, LARs may seriously undermine the ability of the international legal system to preserve a minimum world order, the Special Rapporteur fears.¹⁵ Then the issue of LARs – or, later, LAWS – was moved from the human rights forum of the HRC to the arms control forum of the CCW, where the problematic legal issues identified by the UN Special Rapporteur remain.¹⁶

In 2013, the States Parties to the CCW decided that the issue of LAWS would be discussed in informal meetings of experts under the rubric of ‘questions related to emerging technologies in the area of lethal autonomous weapon systems’.¹⁷ At the fifth review conference of the CCW in 2016, it was decided that a Group of Governmental Experts (GGE) would be set up which would be open to all States Parties to the Convention.¹⁸ About 80 states have participated in the work of the GGE, among which are found the permanent members of the UN Security Council, the EU member states, as well as numerous civil society organisations, academic institutions, the International Committee of the Red Cross (ICRC) and the UN Institute for Disarmament Research (UNIDIR).¹⁹ In 2018 and 2019, the GGE agreed on eleven guiding principles in total in the area of LAWS.²⁰ Also in 2019, the States Parties to the CCW

¹⁴ Ibid., para. 110.

¹⁵ Ibid.

¹⁶ Gill, *supra* note 10, p 276.

¹⁷ 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, UN Doc. CCW/MSP/2013/10, 16 December 2013, paras. 32, 18.

¹⁸ Fifth Review Conference 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, UN Doc. CCW/CONF/10, 23 December 2016, p 9, Decision 1.

¹⁹ Cf., for instance, Group of Governmental Experts 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, UN Doc. CCW/GGE.1/2021/CRP.1, 8 December 2021, paras. 6–11.

²⁰ Group of Governmental Experts 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, UN Doc. CCW/GGE.1/2018/3, 23 October 2018, para. 21; Group of Governmental Experts of

endorsed the eleven guiding principles, and the GGE was given the mandate to work out recommendations relating to the clarification, consideration and development of aspects of the normative and operational framework of LAWS.²¹ The recommendations, had the GGE been able to reach consensus, would have been presented to the States Parties at the Sixth Review conference of the CCW, which took place in December 2021.²² All decisions within the framework of the CCW, including the GGE, are adopted by consensus.

3 The guiding principles

Eleven guiding principles have been worked out by the GGE.²³ The guiding principles are preceded by a *general introductory declaration*, where the GGE affirms that international law, in particular the UN Charter and IHL, as well as relevant ethical perspectives, should guide the continued work of the GGE.

The *first of the guiding principles* (a) states that IHL continues to apply fully to all weapons systems, including the potential development and use of LAWS.

Thus, the area of LAWS, although relatively new as a particular area of discussion, is not lawless by default, but LAWS are subject to the application of existing international law. The question of the applicability of old law to new weapons has arisen before. When the issue of the legality of the threat or use of nuclear weapons – invented after most of the principles and rules of humanitarian law applicable in armed conflict had already come into existence – came before the International Court of Justice (ICJ) in 1994, by way of a request for an advisory opinion by the UN General Assembly, the Court found that ‘there can be no doubt as to

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, UN Doc. CCW/GGE.1/2019/3, 25 September 2019, para. 16.

²¹ 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, Final report, UN Doc. CCW/MSP/2019/9, 13 December 2019, para. 31. The guiding principles are contained in Annex III of the Final report of the Meeting of the High Contracting Parties.

²² Cf. *supra* note 19, paras. 12, 17.

²³ Cf. *ibid.*

the applicability of humanitarian law to nuclear weapons'.²⁴ Not being able to 'conclude with certainty that the use of nuclear weapons would necessarily be at variance with the principles and rules of law applicable in armed conflict in any circumstance', the ICJ nevertheless found that use of such weapons, in fact, seems 'scarcely reconcilable' with respect for the strict requirements of the principles and rules of law applicable in armed conflict.²⁵ It remains to be seen whether the issue of LAWS will also come before the ICJ.

The *second principle* (b) lays down an important norm from the point of view of the law, namely that human responsibility for decisions on the use of weapons systems must be retained since accountability cannot be transferred to machines. This should be considered across the entire life cycle of the weapons system, according to the guiding principle. The concept of human control is much discussed in the context of LAWS and in the context, in particular, of the application of IHL. The question is whether IHL could be applied at all in the absence of human control, ultimately, of the activities of the LAWS and thus whether the use of LAWS under those circumstances can at all be lawful. This, in turn, has to do with the way LAWS are defined – i.e. what does autonomous really mean? – which, as we have seen, is a complicated and, so far, unsettled issue.

According to the *third principle* (c) elaborated by the GGE LAWS, human-machine interaction, which may take various forms and be implemented at various stages of the life cycle of a weapon, should ensure that the potential use of weapons systems based on emerging technologies in the area of LAWS is in compliance with applicable international law, in particular IHL.

The *fourth principle* (d) states that accountability for developing, deploying and using any emerging weapons system in the framework of the CCW must be ensured in accordance with applicable international law, including through the operation of such systems within a responsible chain of human command and control.

²⁴ UN General Assembly resolution 49/75 K of 15 December 1994; *Legality of the Threat or Use of Nuclear Weapons*, Advisory Opinion, I. C. J. Reports 1996, p. 226, paras. 85–86.

²⁵ *Legality of the Threat or Use of Nuclear Weapons*, *ibid.*, para. 95, see also para. 97; a Treaty on the Prohibition of Nuclear Weapons was adopted on 7 July 2017, which entered into force on 22 January 2021, 59 states are parties.

Under the *fifth guiding principle* (e), in accordance with States' obligations under international law, in the study, development, acquisition, or adoption of a new weapon, means or method of warfare, determination must be made as to whether its use would, in some or all circumstances, be prohibited by international law. This guiding principle refers to Article 36 of the Additional Protocol I to the Geneva Conventions according to which:

[i]n the study, development, acquisition or adoption of a new weapon, means or method of warfare, a High Contracting Party is under an obligation to determine whether its employment would, in some or all circumstances, be prohibited by this Protocol or by any other rule of international law applicable to the High Contracting Party.²⁶

Thus, the text of the fifth guiding principle is basically identical to a provision in a binding international treaty to which an overwhelming majority of the States of the world are party.²⁷ Consequently, from the point of view of its content, this particular guiding principle could be said to be comparatively legally binding. Sweden refers to this obligation in its commentary on the guiding principles and generally attaches great importance to this provision in the context of the regulation of LAWS, as well as otherwise.²⁸

Under the *sixth guiding principle* (f) further, '[w]hen developing or acquiring new weapons systems based on emerging technologies in the area of lethal autonomous weapons systems, physical security, appropriate non-physical safeguards (including cyber-security against hacking or data spoofing), the risk of acquisition by terrorist groups and the risk of proliferation should be considered'.

In connection with this, according to the *seventh principle* (g), '[r]isk assessments and mitigation measures should be part of the design, development, testing and deployment cycle of emerging technologies in any weapons systems'.

Furthermore, in *principle number eight* (h), it is stated that '[c]onsideration should be given to the use of emerging technologies in the area of lethal autonomous weapons systems in upholding compliance with IHL and other applicable international legal obligations'.

²⁶ Additional Protocol I, see *supra* note 2.

²⁷ Currently 174 States are party to the Additional Protocol I.

²⁸ See further below in sections 4 and 5.

Significantly, under *guiding principle nine*, (i) '[i]n crafting potential policy measures, emerging technologies in the area of lethal autonomous weapons systems should not be anthropomorphized'. We talk about machines, not human beings, when we talk about LAWS.

Perhaps important as a reminder of the most common uses of AI after all, *the tenth principle* (j) states that '[d]iscussions and any potential policy measures taken within the context of the CCW should not hamper progress in or access to peaceful uses of intelligent autonomous technologies'. It is the peaceful uses of AI, not the bellicose ones, which dominate and should dominate the development of the autonomous technologies.

In *principle number eleven* (k) finally, the GGE does its best to maintain the global discussion on the legal norms governing LAWS and to retain the discussion within the UN in particular. According to the eleventh and final guiding principle, '[t]he CCW offers an appropriate framework for dealing with the issue of emerging technologies in the area of lethal autonomous weapons systems within the context of the objectives and purposes of the Convention which seeks to strike a balance between military necessity and humanitarian considerations'. The latter part of this quote has to be understood also as an implicit reference to the Geneva Conventions on the victims of war, which are founded on an effort to balance military necessity and humanitarian concerns.²⁹ As we saw earlier, direct references to IHL are made in the opening of the guiding principles on LAWS and in the very first guiding principle, among others, marking the particular normative importance of IHL for the area of LAWS.

²⁹ Geneva Convention I for the Amelioration of the Condition of the Wounded and Sick in Armed Forces in the Field, 12 August 1949, 196 States Parties; Geneva Convention II for the Amelioration of the Condition of Wounded, Sick and Shipwrecked Members of Armed Forces at Sea, 12 August 1949, 196 States Parties; Geneva Convention III Relative to the Treatment of Prisoners of War, 12 August 1949, 196 States Parties; Geneva Convention IV Relative to the Protection of Civil Persons in Time of War, 12 August 1949, 196 States Parties; Protocol I Additional to the Geneva Conventions (see *supra* note 2); Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of Non-International Armed Conflicts (Protocol II), 8 June 1977, 169 States Parties.

4 Swedish comments on the guiding principles

All the High Contracting Parties to the CCW were invited by the Chair of the 2020 GGE to submit commentaries on the operationalisation of the GGE LAWS' guiding principles.³⁰ Sweden is one of the countries that has responded to the invitation by submitting a commentary.³¹ Specifically, Sweden comments on nine out of the eleven principles, paying special attention to the first and third principles, which are considered being the most fundamental. After the presentation of Sweden's comments below, the two principles that Sweden does not provide particular comments on (principles six (f) and eight (h)) will also be mentioned.

Sweden considers that the *first principle* (a) on the applicability of IHL to LAWS is a fundamental principle. In order for the principle to be upheld, Sweden states that it is of utmost importance to train and exercise the personnel in national armed forces in international law applicable during armed conflict. Further analysis would be welcome, Sweden considers, regarding the application of existing IHL with respect to possible future autonomous weapons systems.

On the subject of the *second guiding principle* (b) on retained human responsibility, the Swedish commentary reproduces the fundamental contents of IHL and begins by pointing out that the choice of military means and methods for a military operation must be compliant with the relevant rules and regulations on how military means can be used. The Swedish commentary continues by saying that in planning a military operation, a military commander and his/her staff must consider and assess the presence of civilians (principle of distinction), the principle of proportionality, the principle of precautions in attack and the prohibition of causing unnecessary suffering and superfluous injury. 'The use of a weapon that cannot, or will fail to, fulfil these provisions of IHL

³⁰ *Commonalities in national commentaries on guiding principles*, UN Doc. CCW/GGE.1/2020/WP.1, para. 1, <<https://meetings.unoda.org/section/group-of-governmental-experts-gge-on-emerging-technologies-in-the-area-of-lethal-autonomous-weapons-systems-laws-documents-4929-documents-4947/>> accessed 19 August 2021.

³¹ Swedish Commentary on the Operationalization of the Guiding Principles on LAWS within the CCW, 30 August 2020, Permanent Mission of Sweden, <<https://meetings.unoda.org/section/group-of-governmental-experts-gge-on-emerging-technologies-in-the-area-of-lethal-autonomous-weapons-systems-laws-documents-4929-documents-4947/>> accessed 19 August 2021.

may not be deployed or used (sic!)', Sweden continues.³² These provisions make up the fundamental principles of IHL, and any deployment or use of LAWS that would not meet the requirements of IHL would thus be unlawful. Sweden even wishes to ban LAWS that do not meet the requirements of IHL, as we will see below.³³

The *third guiding principle* (c) states that human-machine interaction should ensure that the potential use of weapons systems based on emerging technologies in the area of LAWS is in compliance with applicable international law, in particular IHL. Sweden considers this to constitute another fundamental guiding principle, in addition to the first one stating that IHL continues to apply fully to all weapons systems. It is also Sweden's position that preserving human control over the use of force is a key objective. Furthermore, military decision-makers and operators need to be in control – both in terms of their understanding of the weapons systems and their ability and skill to control the systems. Also, all weapons systems have to be predictable and reliable so that their human operators always can be certain that the systems will function in accordance with the intentions of the operator. The Swedish commentary continues: In a military context, rules, regulations and procedures should form a hierarchy of instructions for all operations involving weapons. Any complex system must have rigorous handling regulations, including methods for training and procedures for use. Measures to ensure human control should be considered in the entire life cycle of a weapons system. The specific measures will be context dependent. A system's type of target as well as spatial and temporal limits are likely to be important factors, according to the Swedish view.

Moreover, according to Sweden, in the development of regulations, procedures, manuals and training programmes, the human-machine interaction and its limitations need to be taken into account. In the legal weapons review process (under Article 36 of the Protocol I additional to the Geneva Conventions), an analysis must be performed to ensure that it will be possible to use a given weapons system in compliance with IHL. This analysis should include aspects of human-machine interaction and the ways in which they are addressed in manuals and training programmes.

³² Ibid.

³³ See section 5.

Finally comes perhaps the most relevant Swedish reflection in the commentary concerning the third guiding principle: The more precise requirements of human control in various contexts still need to be analysed, understood in practical terms and agreed upon. The remaining issue here is exactly what Sweden points out, namely that it still remains to analyse, understand practically, and agree upon what 'human control' means. Or, put in other words, one of the crucial elements – 'human control' – of the normative regulation of LAWS on the global level, at least in the view of Sweden, is still entirely undefined.

If one adds to this the fact that the other crucial element of the normative debate on LAWS also remains undefined in the global context, namely the definition of the actual subject of the debate, the definition of 'LAWS' themselves, then the remaining degree of indeterminacy of the normative global discussion on LAWS becomes evident. An agreement among the participating States on what exactly is being discussed is still outstanding. It is important to note, however, this is not an argument against discussing LAWS on the global level; inversely, it should rather be an argument in favour.

With respect to the *fourth guiding principle* (d), saying that accountability for developing, deploying and using any emerging weapons system in the framework of the CCW must be ensured in accordance with applicable international law, including through the operation of such systems within a responsible chain of human command and control, the Swedish commentary refers back to the comments made concerning the first and second guiding principles.

The *fifth guiding principle* (e) states that in accordance with States' obligations under international law, in the study, development, acquisition, or adoption of a new weapon, means or method of warfare, determination must be made as to whether its employment would, in some or all circumstances, be prohibited by international law. Sweden comments that states have an obligation under international law (Article 36 Protocol I additional to the Geneva Conventions) to determine whether the use of a new weapon would be prohibited under international law.³⁴ We saw a reference earlier by Sweden to that provision in the context of the third guiding principle. With respect to the fifth guiding principle, Sweden states further that in a review in accordance with Article 36, the characteristics of the weapons system are examined, as well as its planned

³⁴ Cf. *supra* note 26.

use and other relevant aspects. In case of doubt or scientific uncertainty, the examining entity could request further information and/or apply further test methods, according to the Swedish commentary. The examining entity is then to issue a decision that approves or rejects the weapons system or method under review. It could also issue strict requirements for modifications or limitations that would bring the system in line with the requirements of international law.

Sweden adds that information is available on a number of national legal review systems – the Swedish one among others – that could assist the States Parties to Protocol I additional to the Geneva Conventions, wishing to create a system for legal weapons reviews or to examine an existing system.

The *seventh guiding principle* (g) – the sixth (f) is not commented upon by Sweden – is relatively straightforward and so is the Swedish comment to principle six. Risk assessments and mitigation measures should be part of the design, development, testing and deployment cycle of emerging technologies in any weapons systems, according to guiding principle six. Sweden comments simply that risk assessments are part of the development of all advanced weapons systems. The processes of procurement, maintenance and use of such systems should be controlled by elaborate safety procedures. The procedures should be documented in handbooks on safety from different perspectives, ranging from questions about explosives and ammunition to software quality, according to the Swedish comment.

The *ninth guiding principle* (i) – the eighth (h) is not commented upon – concerns a subject that stimulates the imagination. According to the ninth guiding principle, in crafting potential policy measures, emerging technologies in the area of lethal autonomous weapons systems should not be anthropomorphised. In fact, this is a phenomenon often pointed out in the discussion of LAWS in different fora. Sweden comments that describing technical systems in a non-technical context is a challenging task. Using adjectives normally used to describe human behaviour easily causes confusion and a risk of drawing inaccurate conclusions about technical systems, which do not possess human qualities. To avoid this, only strictly technical terms should be used.³⁵

³⁵ According to the summary drawn up by the Chair of the 2020 GGE – *Commonalities in national commentaries on guiding principles* – several commentaries underscored that weapons can only ever be tools lacking agency and legal personality, that machines are not

In the *tenth guiding principle* (j), stating that discussions and any potential policy measures taken within the context of the CCW should not hamper progress in or access to peaceful uses of intelligent autonomous technologies, a crucial aspect of the discussion of LAWS is addressed. Here, it can be noted that the characterisation ‘intelligent’ would seem to anthropomorphise the autonomous technologies right from the start, i.e. the designation “‘intelligent’ autonomous technologies’, or ‘artificial “intelligence”’ (AI) for that matter, would seem to turn the technical phenomena under discussion inherently anthropomorphised. Perhaps the term ‘intelligent’ as such should be avoided in the context of describing technologies. This, however, is nothing that Sweden brings up in its comment on the operationalisation of the guiding principles.

Sweden comments instead that, although peaceful uses of technology are not within the scope of the CCW, the following may be noted: The overlap between the civilian and military spheres regarding technology development is significant and appears to be increasing. This creates a mutual dependency, according to Sweden. If a new technology is adapted for military use, the requirements for robustness and reliability of the system need to be set very high.

Sweden continues by saying that technological progress in e.g. automation, autonomy, artificial intelligence and digitalisation/computerisation, is normally common to the military and the civilian spheres, although often driven by civilian (commercial) interests. The challenges of ensuring meaningful control are almost the same for technical systems that may be dangerous (civilian applications), and systems designed to be dangerous (weapons), according to the Swedish comment. This complicates, or makes impossible, the prohibition of certain technologies relating to LAWS since the technologies are used in both the civilian and military spheres.

The eleventh and final guiding principle (k) is relatively straightforward and concerns the appropriate framework for the continued international discussions of LAWS. The eleventh guiding principle states that the CCW offers an appropriate framework for dealing with the issue of emerging technologies in the area of LAWS considering the objectives

moral agents, and that policy measures must always address humans, UN Doc. CCW/GGE.1/2020/WP.1, para. 18 <<https://meetings.unoda.org/section/group-of-governmental-experts-gge-on-emerging-technologies-in-the-area-of-lethal-autonomous-weapons-systems-laws-documents-4929-documents-4947/>> accessed 19 August 2021.

and purposes of the Convention, which seeks to strike a balance between military necessity and humanitarian considerations. Judging from the Swedish comment, Sweden seems to fully agree with this guiding principle. The participation of experts from several relevant disciplines, as well as representatives from states, civil society and industry, provides a richness of perspectives, Sweden says. Looking forward, the work needed to increase the common understanding of the concept of human control in relation to legal, military and technological aspects is a challenge, Sweden continues. Experts from all the States Parties to the CCW need to be part of the effort, including from the Parties who possess the most advanced capabilities in this area, Sweden concludes.

Sweden does not comment on the operationalisation of principles (f) and (h). Furthermore, there are no explanations for the lack of comments on these principles. Perhaps Sweden considers that the comments on the other principles cover the content of principles (f) and (h) as well, or Sweden considers the contents of the latter principles so self-evident and/or easily operationalised that the principles do not need any further comment. As mentioned earlier, principle (f) states that when developing or acquiring new weapons systems based on emerging technologies in the area of LAWS, physical security, appropriate non-physical safeguards (including cyber-security against hacking or data spoofing), the risk of acquisition by terrorist groups and the risk of proliferation should be considered. Sweden might perhaps consider that this is already included in the process of review of new weapons under Article 36 of TP I. The second guiding principle not commented on by Sweden – principle (h) – states that consideration should be given to the use of emerging technologies in the area of LAWS in upholding compliance with IHL and other applicable international legal obligations. Perhaps Sweden considers that this sounds reasonable enough and does not call for any further comment.

5 Swedish policymaking on LAWS

Three substantial reports have been produced by different working groups at the Swedish Ministry for Foreign Affairs on the subject of LAWS since 2016, when the GGE LAWS was established.³⁶ The reports present the

³⁶ *Slutrapport: Arbetsgruppen om autonoma vapensystem* (Final Report: The Working Group on Autonomous Weapon Systems), 2016, cf. supra note 6; *Dödliga autonoma*

phenomenon of LAWS and the problems involved in getting to grips with LAWS from a normative perspective as well as from the point of view of policy-making more generally. The reports directly and indirectly provide the government with support and suggestions for future Swedish policymaking in this area. Some important points in the most recent Foreign Ministry report (from 2021) will be discussed below in relation to the normative regulation of LAWS. The report is entitled “An Effective Ban on Deadly Autonomous Weapon Systems that are Incompatible with the Requirements of International Law”.³⁷

The purpose of the report is to put together all the standpoints and perspectives of the members of the working group producing the report, who represent different stakeholders in the Swedish discussion of LAWS, and to make concrete proposals on how Sweden could best push the issue of an effective ban on LAWS that are incompatible with the requirements of international law. In addition to persons coming from different government ministries, the stakeholders represented were the civil society in the form of the Swedish Red Cross and the Swedish branch of the Women’s International League for Peace and Freedom, the Swedish defence forces and a couple of defence and peace research institutions.

From the normative perspective, the report addresses the way in which human rights and international humanitarian law apply to LAWS generally. The report also deals specifically with the provision in Article 36 of Protocol I additional to the Geneva Conventions concerning the obligation of States Parties to undertake a review of the compatibility with the Protocol or any other rule of international law of any new weapon, means or method of warfare that the States consider acquiring. The report also briefly presents the contents of another report, authored by the Swedish Red Cross, entitled “IHL and gender: Swedish experiences”.³⁸ A proposal that Sweden should pursue the issue of the integration of a gender perspective in the work on LAWS *inter alia* within the framework of CCW

vapensystem: Rapport till Folkärhets- och nedrustningsdelegationen (Deadly Autonomous Weapon Systems: Report to the International Law and Disarmament Delegation), 2020, cf. supra note 7; and *Ett effektivt förbud mot dödliga autonoma vapensystem som är oförenliga med folkrättens krav* (An Effective Ban on Deadly Autonomous Weapon Systems that are Incompatible with the Requirements of International Law), April 2021, on file with author.

³⁷ Cf. *ibid.*

³⁸ Cecilia Tengroth and Kristina Lindvall (eds.), Stockholm: Swedish Red Cross and Swedish Ministry for Foreign Affairs, 2015.

was included among the proposals for Swedish action on the road to an effective ban on unlawful LAWS as the last item.

In the report, the defence forces themselves emphasise the importance of meaningful human control in the context of LAWS. A necessary condition for the expediency of the defence forces – i.e. the possibility to reach intended effects and only the intended effects – is that decision-makers and system operators have meaningful human control over the military means used to achieve the effects. Not having meaningful human control is thus not militarily justifiable, and a military reality where such control does not exist is not desirable from the perspective of the defence forces. Another consequence of retaining meaningful human control is that decision-makers and operators can be held accountable for achieved effects, positive as well as any undesired or unlawful effects. According to the report further, in the view of the defence forces, any regulation of automated systems with properties that are dangerous to humans should focus on the concept of meaningful human control.

Then, of course, the question arises as to how the concept of meaningful human control could be defined, regulated and operationalised; this question, however, is currently very far from being answered either at the national Swedish level or at the global level. The Swedish Peace Research Institute (SIPRI) and the International Committee of the Red Cross (ICRC) have recently published a study on different possible ways of exercising human control in the context of LAWS.³⁹ In the study, SIPRI and the ICRC recommend that future discussions on the normative and operational regulation of LAWS should focus on demands for human control. Thus, the views of SIPRI and the ICRC on the regulation of LAWS, to a large extent, would coincide with the views put forward by the Swedish defence forces in the 2021 Foreign Ministry report. As described above, the issue of human control was also raised in the eleven guiding principles (in principle (b) and (c) in particular) and in the Swed-

³⁹ Vincent Boulanin, Neil Davison, Netta Goussac, Moa Peldán Carlsson, *Limits on Autonomy in Weapon Systems: Identifying Practical Elements of Human Control*, Stockholm: SIPRI, 2020; see also *ICRC Position on Autonomous Weapon Systems*, 12 May 2021, <<https://www.icrc.org/en/publication/455001-icrc-position-autonomous-weapon-systems>> accessed 21 February 2022; cf. further, for instance, Filippo Santoni de Sio and Jeroen van den Hoven, “Meaningful Human Control over Autonomous Systems: A Philosophical Account”, *Frontiers in Robotics and AI*, vol. 5, article 15, 2018, 1–14, <<https://www.frontiersin.org/articles/10.3389/frobt.2018.00015/full>> accessed 28 September 2021.

ish Commentary on the Operationalisation of the Guiding Principles on LAWS within the CCW.⁴⁰

On the subject of the work going on in international fora, the 2021 Swedish Foreign Ministry's report on unlawful LAWS points out that the international work ahead is largely dependent on continued work within the framework of the CCW. Another important aspect, according to the Swedish Foreign Ministry report, presumably affecting the future work with the issue of LAWS, is how high LAWS is on the international agenda. The report does not clearly indicate whether the issue of LAWS is high on the international agenda or whether the issue is not so highly placed. It could seem between the lines as if the authors of the Swedish report fear that, in effect, the LAWS issue might not be all that high on the international agenda. Within the disarmament administration of "a number" of governments, the report says, the LAWS issue plays a "rather prominent and important" role.⁴¹ The same goes for those civil society organisations engaged in peace and disarmament, which also affects policy according to the report. In a number of countries, primarily in Europe, governments and parliaments are also engaged in the LAWS issue, according to the Swedish Foreign Ministry report.

When the Foreign Ministry report summarises the Swedish policy on LAWS so far, the first point taken up is that Sweden pushes for an effective ban on LAWS that are not compatible with the requirements of international law.⁴² A bit further down the list, it is stated that an effective ban must include as many countries as possible, of course, also those countries trying to develop the weapon, but this does not necessarily mean that these countries must participate actively in the drafting of the ban, according to the Swedish report. The goal of the Swedish government is as broad a consensus as possible. A further point on the same theme is the Swedish view that a broad agreement in the framework of the CCW would increase the possibilities to reach a future effective ban on LAWS that do not fulfil the requirements of international law. The remaining points in the summary by the Foreign Ministry of the Swedish policy correspond quite well with the content of the Swedish Com-

⁴⁰ See *supra* sections 3 and 4, respectively.

⁴¹ "[E]tt antal" and "tämmligen framträdande och viktig" respectively, in Swedish.

⁴² "Sverige driver på/ska vara ledande för ett effektivt förbud..." in Swedish.

mentary on the Operationalisation of the Guiding Principles on LAWS within the CCW.⁴³

Discussing the issue of a ban in further detail later in the report, the working group begins by stating the obvious, namely that the normative work with LAWS so far is still characterised by a lack of clear definitions. In order to reach a ban, it is fundamental that it is clear what is banned, the report states. Four central questions with respect to the achievement of a ban were particularly discussed by the working group: Human control, the form of a ban/regulation, the content of a ban and finally, the best way for Sweden to pursue the issue of a ban.

The Swedish official position is that LAWS that are incompatible with the requirements of international law should be banned. In the annual statement in 2020 of foreign policy by the government in parliament, the Swedish Foreign Minister Ms Ann Linde said that '[w]ithin the framework of the Convention on Certain Conventional Weapons, Sweden is pushing for an effective international ban on lethal autonomous weapons systems that are incompatible with the requirements of international law'.⁴⁴ In 2021, the Swedish government's policy seemed to remain the same, although formulated in a slightly different manner. In 2021, the Foreign Minister, in the statement of foreign policy, said that '[a] future scenario of lethal autonomous weapons systems (LAWS) that do not comply with international law must be avoided. With the objective of an effective international ban, Sweden is actively participating in the important work within the framework of the Convention on Certain Conventional Weapons'.⁴⁵

With respect to *human control*, the Swedish Foreign Ministry's report finds that in a ban on LAWS, a provision on human control will probably be the most important provision. The report observes that the question of human control has been a core issue since the beginning of the debate on LAWS. There is consensus on the question of human responsibility and of a well-functioning human-machine interaction. There are no explicit requirements for human control in IHL. In the view of the Foreign Ministry working group, clear requirements for human control would be an

⁴³ See *supra* section 4.

⁴⁴ <<https://www.government.se/speeches/2020/02/2020-statement-of-foreign-policy/>> accessed 20 August 2021.

⁴⁵ <<https://www.government.se/speeches/2021/02/statement-of-foreign-policy>> accessed 20 August 2021.

effective way of setting boundaries for the development and use of LAWS that are not compatible with international law – i.e. unlawful LAWS. The Foreign Ministry working group writes that an increasing number of countries think that the requirement for human control as an element of the eleven guiding principles should be a central theme in a normative and operational framework. Therefore, whether one is considering a regulation or a ban, both could be based on these principles. The Swedish Foreign Ministry report finds that the designation used for human control varies. Sometimes the designation “sufficient” is used, sometimes “meaningful”; in the context of the GGE, the concept “human-machine interaction” (appropriate for the use and capabilities of a particular weapons system) is used instead, according to the Foreign Ministry report.⁴⁶ The Swedish Foreign Ministry working group is almost unanimous in the opinion that Sweden should use the concept “meaningful” human control’. Then the concept of human control would have to be defined in more detail. This work remains to be done at the international level. Superficially, human ‘control’ over an ‘autonomous’ weapon system might seem to constitute a contradiction in terms. In reality, it is probably a question of degree; the weapon system will be more or less autonomous and the human control more or less close.

On the subject of the *form* of a prospective prohibition/regulation of LAWS, the global battle lines on the issue of LAWS appear in the report of the Foreign Ministry working group. In effect, these battle lines probably set the boundaries for the development of LAWS in a real sense. Some countries, the report says, support the view that the efforts within the framework of the CCW should be directed towards achieving a legally binding instrument prohibiting LAWS. On the opposite side, there are a number of countries – Russia, the US, India, Japan, Australia, the United Kingdom, Israel, China – who do not see any need for any additional regulation beyond the already existing IHL. Several EU countries have advocated a political declaration and/or a code of conduct, the Swedish Foreign Ministry report observes. According to the report, a declaration and a code of conduct could lead to a new protocol to the CCW that either regulates or prohibits LAWS.⁴⁷ A successful negotiation within the framework of the CCW would either lead to a regulation or a ban, which is followed up regularly by the States Parties, and thereby

⁴⁶ Cf. the third guiding principle (c) elaborated by GGE LAWS, *supra* section 3.

⁴⁷ There are five protocols already.

the compliance with the regulation or ban could be effectively monitored. Reasonably, it would be the GGE that would be given the task of drafting a proposal for a protocol, the Swedish Foreign Ministry report says. Since the consensus rule applies in the CCW, all States Parties must agree to such a process.

If the work in the CCW is unsuccessful, there might be proposals for the initiation of work, with a view to a convention outside the CCW framework. This work could take two forms, according to the Swedish report. The first option would be a UN convention after a decision by the UN General Assembly. In order to achieve a decision by the UN General Assembly, it is necessary that a number of countries push the issue with priority, the report observes. The second option would be to pursue the work towards a convention outside the UN framework. In order to be successful, such an effort would presuppose a number of strongly committed countries that would also be willing to finance the conferences and carry out the secretarial work. With respect to both of the latter two alternatives, the Swedish Foreign Ministry report points out, it is improbable that any of the militarily and technologically most important countries would get involved.⁴⁸ It remains to be seen whether the efforts to achieve a regulation or a ban in any of the fora listed in the report will be successful.⁴⁹

With respect to all the possible avenues for the negotiation of a regulation or prohibition of LAWS, the active participation of the civil society is important, as stated in the Foreign Ministry report.

On the issue of the *content* of a ban, the Swedish Foreign Ministry report states that irrespective of whether the ban would come about in the form of a new protocol to the CCW or in the form of a convention,

⁴⁸ The most recent example would be the Treaty on the Prohibition of Nuclear Weapons Nuclear Weapons, cf. *supra* note 25, adopted within the UN framework; see also the Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on their Destruction, adopted 18 September 1997, entry into force 1 March 1999, 164 state parties, adopted outside the UN framework.

⁴⁹ For the time being the GGE LAWS will continue its work and its efforts to elaborate 'possible measures' in respect of the normative and operational framework of LAWS; the issue was intensely controversial at the Sixth Review Conference of the High Contracting Parties to the CCW (Sixth Review Conference 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, UN Doc. CCW/CONF.VI/11, 10 January 2022, p 9–10, Decision 1).

the design of the ban can build on previous instances of prohibition of certain types of weapons.⁵⁰ A protocol to the CCW may possibly be simpler as to form and content in comparison with a convention, the report observes.

The Swedish Foreign Ministry report argues that a ban may contain both positive and negative obligations. Positive obligations stipulate what requirements are placed on the systems and on the use of the systems (that which is prescribed), while negative obligations indicate what is banned (that which is proscribed).

The purpose of the positive obligations is to maintain human control throughout the entire life cycle of the weapons system. Maintaining human control requires a clear chain of order and control by human beings and demands predictability when weapons are used, the report says. The predictability of the mode of operation of a deadly technical system is necessary in order for the system to be compatible with IHL, the Foreign Ministry Report continues. Positive obligations can be drafted so that they are possible to check and follow up; furthermore, positive obligations underline the importance of compliance with IHL, the report states. The negative obligations normally clearly state what is prohibited. The Swedish Foreign Ministry says that it should be possible to state that deadly autonomous weapon systems that cannot respect the principles of distinction, proportionality and precaution, including the prohibition of causing superfluous injury or unnecessary suffering, are banned. However, the report adds that research on LAWS for purposes of defence or protection should not be banned. It is unclear whether this would include research on potentially unlawful LAWS.

On the last of the four central questions with respect to a ban on unlawful LAWS discussed by/within the Swedish Foreign Ministry working group – *the best way for Sweden to pursue the issue of a ban* – the report essentially finds that cooperation with other States is necessary for success, including cooperation at the global level. The Nordic countries, some EU states, Switzerland, and a number of countries in other parts of the world are mentioned in particular. It is pointed out in the report that it is also important to have good contacts with the States that have the greatest capacity to develop LAWS. Since Sweden is an important manufacturer of weapons, it is also pointed out in the report that the States included in the so-called six nations collaboration between the six biggest defence in-

⁵⁰ Cf. *supra* note 48.

dustry nations in the EU (in addition to Sweden: France, Italy, Spain, the United Kingdom and Germany) are also important from the perspective of weapons development.⁵¹

The working group drafting the Foreign Ministry Report is of the opinion that the best way for Sweden to proceed would be to pursue the issue of a ban on unlawful LAWS within the framework of the CCW and build on what has already been achieved by the GGE.⁵² Judging from the report, the prospect of the GGE getting the mandate to draft a new protocol to the CCW, either in the form of a ban or in the form of a “clear” regulation, is not entirely unrealistic. However, the report ominously points out that there is great uncertainty about when the 2021 review conference of the CCW will take place.

An important point made in the Foreign Ministry report among the proposals for Swedish action on the road to an effective ban on unlawful LAWS is that Sweden should promote the weapons review process under Article 36 of the Protocol I additional to the Geneva Conventions. Since the review of the compatibility with IHL, or any other rule of international law, of the use of any new weapon already constitutes a binding obligation for States under international law, promoting respect for this provision would seem to be a good idea. The report proposes that the weapons review process under Article 36 Additional Protocol I is promoted in the EU as well as in the CCW framework. In the latter case, the weapons review issue should be pursued regardless of the outcome of the discussions on LAWS, the report says, well aware of the difficulties involved in moving forward in the normative work on LAWS. As the Swedish Foreign Ministry report aptly finds, a well-functioning weapons review process under Article 36 on the global scale should also have the capacity to catch LAWS that are incompatible with the requirements of international law, since by definition these are ‘prohibited by [Additional Protocol I to the Geneva

⁵¹ Cf. Sveriges överenskommelser med främmande makter (SÖ) 2001:13 Framework agreement between The French Republic, The Federal Republic of Germany, The Italian Republic, The Kingdom of Spain, The Kingdom of Sweden, and The United Kingdom of Great Britain and Northern Ireland concerning measures to facilitate the restructuring and operation of the European defence industry, concluded 27 July 2000, entry into force for Sweden 6 May 2001.

⁵² See also Group of Governmental Experts on emerging technologies in the area of Lethal Autonomous Weapons Systems, General Statement by Sweden, Geneva, 3–13 August 2021, <https://meetings.unoda.org/section/firstsession_statements> accessed 28 September 2021.

Conventions] or by any other rule of international law', as stipulated in Article 36. We will see what comes first, a ban on unlawful LAWS or general respect for the weapons review process under Article 36.

6 Conclusion

LAWS (lethal autonomous weapon systems) are here to stay, and the question is whether they need to be regulated internationally and if so, how. This contribution has dealt with the background to the current international normative debate on LAWS, the tentative attempts in the UN to agree on a normative framework for LAWS, and the Swedish position with respect to the emerging normative principles and further policymaking in the area. Widespread disagreement remains at the global level on what would be the appropriate form and content of any new regulation of LAWS. Widespread disagreement also remains on the definition of 'LAWS'. The international normative efforts currently within the framework of the CCW (Convention on Certain Conventional Weapons) are focused on the concept of 'human control'. Retained human control, ultimately, over the otherwise highly automated weapon systems, is a necessary condition for it to be possible to apply existing law – primarily IHL (international humanitarian law) – or any law. Thus, human control has become the hook on which the current discussion hangs.

It might be speculated that the loss of human control over advanced weapon systems would be in no human being's interest, irrespective of how technologically resourceful one's home country is. Still, there is an evident negative correlation between the ability of a country to develop LAWS and its willingness to submit to further international normative regulation of highly automated weapon systems. Conversely, the countries aiming to achieve further international regulation of LAWS are typically those countries lacking the resources to develop LAWS themselves.

Sweden intends to pursue an international ban on LAWS that are incompatible with the requirements of international law. If a ban turns out not to be attainable, another kind of clear international regulation of LAWS might be an alternative.

Sweden also emphasises the importance of the compulsory legal review of new weapons (or means or method of warfare) under Article 36 in Protocol I additional to the Geneva Conventions. A careful national implementation of the legal review under Article 36 would result in a

determination as to whether the employment of the new weapon would be prohibited, or not, by IHL or any other rule of international law. In addition to the ban on the use of an unlawful weapon that would potentially follow from such a review under Protocol I additional to the Geneva Conventions, Sweden intends to pursue a ban on the unlawful weapon itself.

