ICRC

ICRC commentary on the 'Guiding Principles' of the CCW GGE on 'Lethal Autonomous Weapons Systems'

The 'Guiding Principles' agreed by the Convention on Certain Conventional Weapons (CCW) Group of Governmental Experts (GGE) on 'Emerging Technologies in the Area of Lethal Autonomous Weapons Systems' provide a useful basis for orientating the future work of States towards agreeing an effective 'normative and operational framework' to address autonomous weapon systems.[1]

This commentary groups the Guiding Principles under three main themes that, in the view of the ICRC, deserve States' focused attention.

1. International humanitarian law limits the development and use of autonomous weapon systems

It was affirmed that international law, in particular the United Nations Charter and International Humanitarian Law (IHL) as well as relevant ethical perspectives, should guide the continued work of the Group. Noting the potential challenges posed by emerging technologies in the area of lethal autonomous weapons systems to IHL, the following were affirmed, without prejudice to the result of future discussions

The ICRC welcomes States' unequivocal affirmation that both international law and ethical perspectives should guide the work of the GGE. The development and use of autonomous weapon systems is limited by international law, in particular the general rules of IHL governing the choice of means and methods of warfare and the specific treaty and customary rules prohibiting or restricting certain weapons.[2] Additional constraints may derive from ethical considerations, including from the principles of humanity and the dictates of public conscience.[3]

(a) International humanitarian law continues to apply fully to all weapons systems, including the potential development and use of lethal autonomous weapons systems

IHL regulates the conduct of armed conflict and seeks to limit its effects. It protects people not taking part in hostilities (such as civilians) and those who are no longer doing so (such as wounded or surrendered combatants). During an armed conflict, IHL governs the use of weapons, means and methods of warfare in the conduct of hostilities, including autonomous weapon systems. Outside armed conflict, the use of weapons is primarily governed by international human rights law, which is applicable at all times.

In the view of the ICRC, autonomous weapon systems raise challenges for compliance with IHL. The rules on the conduct of hostilities, notably the rules of distinction, proportionality and precautions in attack, already set limits on the use of autonomous weapon systems, although many legal questions require clarification, and ethical concerns may demand limits that go beyond those found in existing law.[4]

The key question is not *whether* IHL applies to autonomous weapon systems in armed conflict, but *how* IHL is applied, that is, how IHL rules are and should be interpreted and implemented in practice, and whether new legally binding rules, policy standards or best practices are needed.[5]

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[1] United Nations, *Report of the 2019 session of the Group of Governmental Experts on Emerging Technologies in the Area of Lethal Autonomous Weapons Systems*. CCW/GGE.1/2019/3, 25 September 2019, Annex IV.

[2] ICRC, *International Humanitarian Law and the Challenges of Contemporary Armed Conflicts*. Report to the 33rd International Conference of the Red Cross and Red Crescent, October 2019, Section 2 B, pp. 29–31.

[3] *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*, as amended on 21 December 2001, Preamble; ICRC, *Ethics and autonomous weapons systems: An ethical basis for human control?* Working Paper for the CCW GGE on LAWS, Geneva, 9-13 April 2018, CCW/GGE.1/2018/WP.5, 29 March 2018.

[4] ICRC, *International Humanitarian Law and the Challenges of Contemporary Armed Conflicts*, 2019, *op. cit.*

[5] ICRC, *States must address concerns raised by autonomous weapons*, Statement to the Meeting of the High Contracting Parties to the CCW, 14 November 2019; ICRC, *International Humanitarian Law and the Challenges of Contemporary Armed Conflicts*, 2019, *op. cit.*; ICRC, *Statement under agenda item 5e*. CCW

(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 whether its employment would, in some or all circumstances, be prohibited by international law

States Parties to 1977 Additional Protocol I to the Geneva Conventions have a legal obligation to conduct legal reviews of new weapons.[6] In the ICRC's view, the requirement to carry out legal reviews also flows from the obligation to ensure respect for IHL. Besides these legal requirements, all States have an interest in assessing the lawfulness of new weapons.[7] Effective legal reviews are critical to ensuring that a State's armed forces comply with IHL in light of rapid technological developments. However, in the view of the ICRC, they are not sufficient alone to address the concerns raised by autonomous weapon systems given the complex legal and ethical questions involved, which require common understandings at the international level.[8]

Implementation of legal reviews of autonomous weapon systems raises practical challenges and questions, especially given the difficulties in foreseeing the likely consequences of use of autonomous weapon systems.[9] In conducting reviews, particular attention should be given to measures needed to ensure human control over weapons and the use of force.

(h) Consideration 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

(f) When 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

(g) Risk assessments and mitigation measures should be part of the design, development, testing and deployment cycle of emerging technologies in any weapons systems

Under IHL, all parties to armed conflict have a legal obligation to respect and ensure respect for IHL. This entails a duty to ensure that all weapons, means and methods of warfare, including autonomous weapon systems, are capable of being used, and are in fact used, in compliance with IHL and with other applicable international legal obligations (*Guiding Principle (h)*). These obligations, as well as additional obligations for States Parties to specific treaties, also demand consideration in the transfer of weapons (*Guiding Principle (f)*).

Risk assessments and mitigation measures during the design, development, testing and deployment of new weapons may be required to ensure compliance with these legal obligations (*Guiding Principle (g)*), including as part of obligations to conduct legal reviews of new weapons (*Guiding Principle (e)*).

2. Human control is central to the legal compliance and ethical acceptability of autonomous weapon systems

(*c) 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 lethal autonomous weapons systems is in compliance with applicable international law, in particular IHL. In determining the quality and extent of human-machine interaction, a range of factors should be considered including the operational context, and the characteristics and capabilities of the weapons system as a whole*

For the ICRC, Guiding Principle (c) – together with Guiding Principles (b) and (d) – reflect the main risks posed by autonomous weapon systems: loss of human control over weapons and the use of force;

GGE on LAWS, Geneva, 25–29 March 2019; Boulanin, V., Davison, N., Goussac, N. and Peldán Carlsson, M., *Limits on Autonomy in Weapon Systems*, ICRC & SIPRI, June 2020, Chapter 4, Recommendations 3 & 4.

[6] ICRC, *A Guide to the Legal Review of New Weapons, Means and Methods of Warfare*, January 2006.

[7] ICRC, *International Humanitarian Law and the Challenges of Contemporary Armed Conflicts*, 2019, op. cit., Section 2.E, pp. 34-35.

[8] ICRC, *Statement under agenda item 5e*, *op. cit.*

[9] *Ibid.*

diffusion, or abdication, of human responsibility for the consequences of their use; and practical challenges in ensuring accountability for violations of international law that may result.

Measures pertaining to human control, responsibility and accountability – including but not limited to measures concerning 'human-machine interaction' and implemented throughout weapon development and use – are critical to ensuring compliance with applicable international law, in particular IHL, as well as ethical acceptability.[10]

Based on humanitarian, legal, and ethical considerations, as well as military operational realities, a recent report co-published by the ICRC and SIPRI proposes a combination of three types of control measures on autonomous weapon systems needed to satisfy legal obligations and ethical considerations: 1) controls on weapon parameters; 2) controls on the environment of use; and 3) controls through human-machine interaction.[11] These measures should be considered in the use of autonomous weapon systems, as well as in their study, research, development and acquisition (*Guiding Principle (e)*).[12]

These types of control measures can inform internationally agreed limits on autonomous weapon systems, whether in the form of new legally binding rules, policy standards or best practices:[13]

- *Controls on weapon parameters* can inform limits on types of autonomous weapon systems including the targets they are used against, as well as limits on their duration and geographical scope of operation, and requirements for deactivation and fail-safe mechanisms.
- *Controls on the environment* can inform limits on the situations and locations in which autonomous weapon systems may be used, notably, in terms of the presence and density of civilians and civilian objects.
- *Controls through human-machine interaction* can inform requirements for human supervision, and ability to intervene and deactivate autonomous weapon systems, and requirements for predictable and transparent functioning.

(b) 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

(d) 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

Legal obligations under IHL rules on the conduct of hostilities must be fulfilled by those persons who plan, decide on, and carry out military operations. It is humans, not machines, that comply with and implement these rules, and it is humans who can be held accountable for violations. Whatever the machine, computer program, or weapon system used, individuals and parties to conflicts remain responsible for their effects.[14] Nevertheless, the way in which autonomous weapon systems function – i.e. independently selecting and applying force to targets without human intervention -- raises questions about the about the practical possibility of holding parties to conflict and individuals legally accountable for the consequences of their use, including for violations of IHL.[15]

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[10] ICRC, *International Humanitarian Law and the Challenges of Contemporary Armed Conflicts*, 2019, *op. cit.*; ICRC, *Statement under agenda item 5a*. CCW GGE on LAWS, Geneva, 25–29 March 2019; ICRC, *Statement under agenda item 5c*, CCW GGE on LAWS, Geneva, 25–29 March 2019; ICRC, *The Element of Human Control*, Working Paper for the Meeting of High Contracting Parties to the CCW 21-23 November 2018, Geneva, CCW/MSP/2018/WP.3, 19 November 2018; ICRC, *Autonomy, artificial intelligence and robotics: Technical aspects of human control*. Working Paper for the CCW GGE on LAWS, Geneva, 20-21 August 2019, CCW/GGE.1/2019/WP.7, 20 August 2019; ICRC, *Ethics and autonomous weapons systems: An ethical basis for human control?*, *op. cit.*; ICRC, *Autonomous Weapon Systems: Implications of Increasing Autonomy in the Critical Functions of Weapons*, August 2016; ICRC, *Autonomous Weapon Systems: Technical, Military, Legal and Humanitarian Aspects*, *March & November 2014.*

[11] Boulanin, V., Davison, N., Goussac, N. and Peldán Carlsson, M., *Limits on Autonomy in Weapon Systems, op. cit.* Chapter 4, Recommendation 1.

[12] *Ibid.,* Chapter 4, Recommendation 5.

[13] *Ibid.,* Chapter 4, Recommendation 2.

[14] ICRC, *International Humanitarian Law and the Challenges of Contemporary Armed Conflicts*, 2019, *op. cit.*

[15] ICRC, *International Humanitarian Law and the Challenges of Contemporary Armed Conflicts*. Report to the 32nd International Conference of the Red Cross and Red Crescent, October 2015, Section VII I) ii), p. 46.

The rules on the conduct of hostilities – notably the rules of distinction, proportionality and precautions in attack – require complex assessments based on the circumstances prevailing at the time of the decision to attack, and during an attack. Commanders or operators must retain a level of human control over weapon systems sufficient to allow them to make context-specific judgments to apply the law in carrying out attacks.[16]

From an ethical perspective, human control is required to preserve human agency and uphold moral responsibility in decisions to use force. This requires a sufficiently direct and close connection to be maintained between the human intent of the user and the eventual consequences of the operation of the weapon system in a specific attack. Weapons, as inanimate objects, do not have moral agency and nor can they meaningfully be held responsible or accountable.[17]

Measures aimed at ensuring human control, responsibility and accountability are outlined under Guiding Principle (c).

3. Towards an effective multilateral response to autonomous weapon systems

(k) The 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

In the view of the ICRC, the CCW – and the GGE on 'Emerging Technologies in the Area of Lethal Autonomous Weapons Systems' – offers an appropriate framework to address the risks posed by autonomous weapon systems falling within its scope. This is without prejudice to consideration of such risks in other relevant fora.

In light of humanitarian, legal and ethical concerns, the ICRC reiterates its call to States at the GGE to urgently agree international limits on autonomous weapon systems. Rapid technological advances and military-doctrinal developments in a number of States indicate that the window for preventive action is fast closing.[18]

As Guiding Principles (b), (c) and (d) imply, an effective policy response to the risks posed by autonomous weapon systems requires consideration of *what* 'quality and extent' of human control is necessary and *how* 'human responsibility' and 'accountability' are ensured. Measures aimed at ensuring human control, responsibility and accountability can inform international limits on autonomous weapon systems.

(i) In crafting potential policy measures, emerging technologies in the area of lethal autonomous weapons systems should not be anthropomorphized

Legal obligations and ethical responsibilities rest with humans. Weapons, as inanimate objects, do not hold such obligations or responsibilities, and it should not be implied that they do (*see also Guiding Principle (b)*).

(j) 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

Even the strictest measures taken to address the concerns raised by autonomous weapon systems can be crafted so as not to hamper progress in or access to relevant technologies for peaceful purposes. For example, the CCW Protocol IV prohibition of blinding laser weapons has not hampered progress in laser technology, nor have the Biological Weapons Convention or the Chemical Weapons Convention hampered progress in the peaceful uses of biology and chemistry.

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[16] ICRC, *International Humanitarian Law and the Challenges of Contemporary Armed Conflicts, op. cit.*

[17] ICRC, *Ethics and autonomous weapons systems: An ethical basis for human control?*, *op. cit.*; Boulanin, V., Davison, N., Goussac, N. and Peldán Carlsson, M., *Limits on Autonomy in Weapon Systems, op. cit.*, Chapter 2, Section III.

[18] ICRC, *States must address concerns raised by autonomous weapons*, *op. cit.*; ICRC, *Statement under agenda item 5e*, *op. cit.*