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

20 March 2015

Original: English

2015 Session
Geneva, 12–13 November 2015
Item 3 of the provisional agenda
Lethal autonomous weapons systems

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Food-for-thought for the informal meeting of experts on lethal autonomous weapons systems
Geneva, 13 – 17 April 2015

Submitted by Germany

1. **Introduction**: The upcoming informal Meeting of Experts on lethal autonomous weapons systems is an opportunity to deepen the understanding and discussions on these weapons systems. This working paper sets out lists of questions for each session of the informal Meeting of Experts. The questions are aimed at assisting States in their preparations for and facilitate discussions at the Meeting.

2. **Technical issues**

(a) "State of play"

(i) What is the current "state of play"

- Concerning the development of autonomous technologies?
- Concerning autonomy in weapon systems?

(ii) In what civilian areas is there increasing autonomy?

(iii) Where and when will these technologies become feasible in combat?

(iv) What are the technical challenges to overcome towards developing fully autonomous weapons systems particularly with regard to the identification of targets?

3. **Military rationale for autonomous functions in weapon systems**

(a) What is the military rationale for pursuing autonomy in specific functions of weapons systems? What would be the reasons for limiting the autonomous capabilities of weapon systems?

(b) In what situations are distinctively human traits, such as fear, hate, sense of honour and dignity, compassion and love, desirable in combat? In what situations do machines that lack emotions offer distinct advantages over human combatants?

(c) International humanitarian law indicates how a party to a conflict should behave in relation to people at its mercy, how would machines comprehend such situations?

(d) Given the volume and complexity of available information, what advantages do autonomous processes offer? Do these make a machine more, or less reliable than a human decision maker?

(e) Are there scenarios in which autonomy might help to protect the lives of civilians and combatants? For example, more precise targeting, preventing collateral damage and lower response time to attacks?

(f) What are the specific opportunities and concerns for developing and deploying autonomous weapons in the context of land, sea and air operations?

4. **Further issues**

(a) Does increasing complexity in tasks performed by autonomous systems make such technologies more or less predictable?

(b) How does autonomy affect the reliability and vulnerability of a weapon system? For example, malfunctioning, hacking or cyber-attacks?

(c) What type of resilience to programming and deployment errors can be built into autonomous systems or the regulations governing their use?

5. **Characteristics of LAWS**

(a) Elements for an understanding of defining characteristics

(i) What are the key characteristics that may assist in understanding LAWS? How might these characteristics make LAWS, or certain types of LAWS, distinct from other weapon systems?

(ii) What is "meaningful human control" of a weapon system? Does the level of human control assist in distinguishing LAWS from other weapons systems?

(iii) Can LAWS be understood in terms of autonomy in “critical functions”? Would it be useful to establish this type of criteria to assess the need to regulate LAWS?

(iv) Does the context and environment in which a weapon system is being used affect its being categorised as an autonomous system?

(v) Do the above mentioned elements usefully contribute to understanding what the characteristics of LAWS are? Are there other ways of viewing LAWS?

(b) Dual-use characteristics of technology

(i) How does the issue of dual use technology impede differentiating between civilian and military applications?

(ii) What are the possibilities of an autonomous system designed for civilian purposes being weaponized? Are there ways to prevent civilian autonomous systems from being weaponized?

(iii) How can research into civilian technology be distinguished from research into military technology?

(iv) How are responsibility and accountability issues dealt with in civil applications of autonomous systems?

(c) Further issues

(i) What are the lessons learnt on regulating dual-use from the fields of biological weapons, chemical weapons and missiles?

(ii) How is legal responsibility determined when a civilian system is weaponized or used for military purposes?

6. **Possible challenges to international humanitarian law (IHL) due to increasing degrees of autonomy**

(a) Targeting rules

(i) Responsibility and accountability are core aspects of IHL. Is the uninterrupted accountability chain within an armed force challenged by increasing autonomy in weapons systems?

(ii) What level of human supervision of a weapon system is implicit in the rules of IHL? Given the increasing trend towards autonomy in weapons systems, will IHL need to be clarified?

(iii) Where do LAWS pose challenges in terms of compliance with IHL? Distinction, proportionality or precautions in attack?

(iv) Is the response to the above question altered by the context and environment in which a LAWS is used?

(v) What will be the effect of LAWS on militaries being able to ensure compliance with IHL? Could LAWS improve compliance?

(b) Link between autonomy and deployment rules

(i) What will be the effect of LAWS on the content of standard operating procedures of the military?

(c) Implementation of legal weapons review

(i) How are legal weapons review implemented at the national level and what would be the particular challenges concerning LAWS?

(ii) Will there be a specific importance for legal weapons review with regards to LAWS?

(iii) For those States that have legal weapons review, what are the lessons learnt?

(iv) Is there a need to introduce standards or would the establishment of best practices be useful in the legal review of LAWS? How would this affect compliance with IHL?

7. **Overarching issues**

(a) Human rights and ethical issues

(i) What would be the impact of the development and deployment of LAWS on human rights, in particular the right to life and the right to dignity?

(ii) What ethical questions arise from the development and deployment of LAWS?

(iii) What does the Martens Clause mean regarding killing by LAWS?

(iv) Does the increasing reliance on robots and autonomous systems in society have an impact on their acceptability in armed conflicts?

(v) Would the ability of LAWS to protect civilian lives in armed conflict (e.g. carry out more accurate targeting) render their use ethically acceptable?

(b) General security issues

(i) How will the development and deployment of LAWS impact on international peace and security?

(ii) Are there potential risks of developing and deploying LAWS, for example, arms race, proliferation or asymmetrical warfare?

(iii) What are the overall strategic implications of the development and deployment of LAWS? What are the implications for regional stability?

(iv) How could LAWS change the conduct of armed conflicts?

(v) Could LAWS lower the threshold for engaging in warfare? If so, what can be done to prevent such escalations of violence?

8. **The Way Forward**

(a) Possible areas for transparency

(i) Should there be a transparency mechanism to monitor the acquisition of LAWS?

(ii) How can transparency be improved regarding the development of military doctrines for the deployment of LAWS (e.g. standard operating procedures)?

(iii) What can be done to enhance transparency in the development of LAWS? For example, what are the lessons learnt from existing mechanisms?

(b) Possible (areas for) common ground

(i) What areas can already be identified as common ground?

(ii) Is there general recognition that some level of human control of a weapon system is necessary? If so, what can be done on this issue?

(iii) What are the unresolved questions? Which areas of the LAWS discussions require further exploration and possibly research?

(iv) What are the overall objectives for the discussions on LAWS? Code of conduct, regulations, restrictions, prohibition?

(c) Possible framework for the future debate on LAWS

(i) In the context of complex and ongoing technological developments and bearing in mind the forthcoming 2016 CCW review conference, what should be the next steps on LAWS (e.g. expert meetings, focussed discussion, GGE)?