Webinar series on emerging technologies
in the area of lethal autonomous weapons systems

Military Aspects – 27 October 2020

In October 2020, the United Nations Institute for Disarmament Research and United Nations Office for Disarmament Affairs convened a series of three webinars, designed to inform the ongoing deliberations of the group of governmental experts on emerging technologies in the area of lethal autonomous weapons systems. The webinars were designed to provide analysis on the technological, military and legal aspects of issue that would benefit from additional clarification or review.

The second webinar addressed military aspects. It was convened by the United Nations Office for Disarmament Affairs and held virtually on 27 October 2020.

Summary of the webinar on military aspects

The group of governmental experts (GGE) has articulated several areas of convergence with respect to the military aspects of its discussions, in particular the importance of risk assessments and mitigation measures in the design, testing and deployment of emerging technologies in the area of lethal autonomous weapons systems (LAWS). It has also identified the need to further explore and clarify differences with respect to the implications of these technologies for the implementation of international humanitarian law (IHL) given that some view they may enhance that implementation while others view that at least some applications of these technologies could never conform with IHL.

The webinar on military aspects was divided into two segments, on security considerations and on operational considerations. The panelists were asked to address specific issues relevant to the work of the GGE and its efforts to provide consensus recommendations on aspects of the normative and operational framework on emerging technologies in the area of LAWS.

Security considerations

On security considerations, discussions within the GGE have focused on two axes of concerns, both related to the possibility that emerging technologies in the area of LAWS could alter the incentives of decision-makers considering the use of force. The first axis relates to decisions to carry out an attack. Several delegations have argued that the use of LAWS would lower risk to the user State's armed forces, thereby leading decision-makers to authorize the use of force in situations where that risk would have been an inhibiting factor. The second axis relates to the risk of unintended escalation as a result of the removal of humans from decision-making processes. Some delegations have also raised concerns regarding arms competition and proliferation, including to non-State actors, although these aspects remain relatively under-studied.

Panelists were invited to discuss the possible implications for peace and security of emerging technologies in the area of LAWS, noting the fact that this aspect had received less attention in the GGE than concerns of a humanitarian, legal or ethical nature.

Dr. Vadim Kozyulin, Program Director, Emerging Technologies and Global Security Program, PRI Center, noted the existing use of what he called "LAWS precursors", including drones and loitering munitions. He argued that it was impossible to be completely sure that loitering missions currently deployed were not operating fully autonomously. In contrast to past weapon development efforts that aimed for greater destructive efforts, the trend with these technologies has been to seek greater precision. Although he believed that LAWS would eventually be capable of complying with IHL, he noted that they could never apply the Martens Clause given their inherent inability to conceptualize the notion of human dignity.

Dr. Kozyulin considered there would be various challenges to developing effective prohibitions on technologies related to LAWS, including a lack of trust between key States, the difficulty of conceiving of effective verification measures and their military utility. Possible implications that will need to be managed include time pressures on strategic decisions and the potential for decision-making processes to become automated.

Ms. Trisha Ray, Associate Fellow, Technology and Media Initiative, Observer Research Foundation, discussed possible use cases for emerging technologies in the area of LAWS, including as a force multiplier and for border patrol functions. She appealed for the LAWS debate to take into account differences between and within the global south and global north.

Ms. Ray noted that efforts to regulate proliferation would need to cover physical and cyber security measures, and must be careful to avoid intruding on countries' economic ambitions. Measures that do not include all major producing States would be unlikely to succeed. Actors can also "Frankenstein" together weapons. Attribution will be complicated: States could for instance claim to have lost control of an autonomous weapon they had in fact passed on to proxy forces.

The moderator, Michael Spies, Coordinator, Science, Technology and International Security Unit, UNODA, led a discussion, drawing on questions submitted by the audience.

In response to a question about what capabilities had the most destabilizing potential, Dr. Kozyulin expressed concern about the dangers posed by ground-based autonomous weapons and missile defences based on drones, neither of which are currently deployed. Ms. Ray said that, given the current state of component technologies, any attempt to deploy LAWS today would be premature.

The panel discussed the prospects of an arms racing dynamic, whereby one or more actor would be motivated to acquire comparable or offsetting capabilities in response to a rival acquiring emerging technologies in the area of LAWS. Dr. Kozyulin felt an arms race was already underway, but that it was not very visible because it took place in laboratories. Ms. Ray thought an arms race could be possible in the future, but was not yet apparent. She noted that the majority of research and development into underlying technologies took place within large corporations in China and the United States.

On proliferation to non-State actors, both experts agreed that this was a real concern given the ease with which underlying technologies and off the shelf systems could be obtained. Both were also of the view that traditional export controls would have limited effectiveness.

The panel on security considerations demonstrated that the implications of emerging technologies in the area of LAWS for peace and security remain unclear, which may be a fruitful area for further deliberations by the GGE.

Operational considerations

On operational considerations, it was noted that there is already agreement that human judgement is essential in order to ensure that the potential use of weapons systems based on emerging technologies in the area of LAWS is in compliance with international law, and in particular IHL. For many this means such weapons must be subject to meaningful human control and that this can be ensured at an international level through various measures implemented at different parts of a weapon's targeting cycle and will depend on certain contextual factors.

Panelists were invited to reflect on how the consensus within the LAWS GGE that human judgement is essential for ensuing compliance with international law could be translated into recommendations for a normative and operational framework.

Dr. Paul Scharre, Senior Fellow and Director, Technology and National Security Program, Center for a New American Security, discussed two approaches that could be taken for determining tasks that would always require humans, regardless of advances in technology.

The first would be to examine current practices of advanced militaries. In some cases, human involvement is very direct, in others it is mediated by technology. Decisions can rely on information from sensors, can be distributed among many individuals and can be based on information that is not real time. This is not something new: until recently, projectiles, once launched, could not be recalled. In this vein, discussions on what is required for human control with regard to LAWS sometimes go beyond what happens today. Perfect, real-time information and an ability to recall weapons is often not feasible. These things are all desirable, but not always practical.

The second approach is to consider the requirements of IHL in order to reach shared understandings about where humans will always be required and what form that required human element should take. As has been evident in discussion in the GGE, understandings of what IHL requires with regards to the human element in the use of force remain contested. Some possibilities include that IHL applies to people and that attacks must be bound in time and space in order for human decisions to be meaningful. How much information human decision makers need is open for debate.

Ms. Netta Goussac, Associate Senior Researcher, Stockholm International Peace Research Institute, drawing on a recent SIPRI-ICRC report, said that the core characteristic of LAWS is that they are triggered by their environment. Their lack of predictability can also be problematic in some instances. There are three incentives for militaries to want to maintain human control over the use of force: (i) military ethos, that is, militaries generally want more, not less, control over use of force, hence they are pursuing these technologies to change, not lose, control; (ii) safety; and (iii) efficiency – to make sure that individual weapons operate in line with strategy.

The GGE can learn from existing practice. Militaries have been using autonomous weapons for decades, although in highly constrained environments and under some form of human control. The unpredictable nature of LAWS can be reduced or compensated for by enacting controls in three areas: (1) on the weapon itself, including where, when and for how long it can operate, the types of targets it can attack, and by setting conditions under which it can apply force autonomously; (2) on the environment of use, including through means such as exclusion zones; and (3) on human-machine interaction, including by ensuring human supervision and ability to deactivate a weapon.

The key challenge is to calibrate the interaction between human users and the weapon systems in order to ensure efficacy, legality and ethical acceptability. There is no one size fits all set of measures as any specific measures will depend on the context, including elements such as the type of tasks, targets and sensors, duration of operation, predictability or controllability of the environment, and characteristics of the human operators. In any given scenario, it is necessary to ensure that the user sufficiently understands the weapon and environment to ensure legal, ethical and operational acceptability. It is also valuable to examine national control measures implemented at different stages of a weapon's life cycle, not just the use phase.

In response to a question on how these different elements might be distilled, Ms. Goussac emphasized that, while there would not be a one size fits all set of constraints, there might be some generalities that could be drawn out. For instance, there could be controls on environments that mean certain weapons are only used in areas where risks to certain persons are reduced. There could be circumstances in which there needs to be direct supervision or the ability to intervene.

On the question of transparency, both speakers noted that the sharing of information within militaries often remained difficult, let alone with other States. New weapon reviews and procurement processes provide opportunities for transparency. Dr. Scharre noted that a contributing factor of the 2003 fratricides involving the Patriot air defense system was a lack of transparency between military engineers and operators about the limitations of the system. This problem will grow with the growing complexity of systems and will require increasingly sophisticated testing. Voluntary transparency measures, however, would help allay fears, identify areas of concern and help with the identification of best practices.

Ms. Goussac noted that transparency is complicated by complexity, as well as by security concerns. International agreements can inform national practice and vice versa. Dr. Scharre agreed there would be limits on what militaries would be willing to share internationally. For example, they would not want to provide technical details that could help others defeat or develop countermeasures for their systems. Nonetheless, some degree of transparency is in the interests of all, including to counteract the hype of weapons manufacturers that could feed arms racing dynamics based on an inaccurate assessment of adversaries' capabilities.

On the topic of investigating potential wrongdoings, Ms. Goussac noted that while the use phase was most critical, the design and development and post-use assessment phases were also important. Measures for ensuring lawfulness, effectiveness and ethical acceptability would be useful in framing the post-use phase as well. Dr. Scharre agreed it was valuable to conduct investigations into accidents, but that these could run up against the bounds of state sovereignty (as for example with the shooting down of civilian airliners). International pressure to be more transparent and conduct assessments could be useful.

Dr. Scharre noted that technology can assist to help ensure the ethical use of a weapon in a manner analogous to automatic braking in a car. The car itself is not doing ethical reasoning, but its actions result in more ethical behavior that minimizes harm. He added that certain IHL principles, such as proportionality, cannot be determined objectively and require human ethical reasoning and judgement. Ms. Goussac agreed, noting that both effects and decisions on the use of force are critical. On effects, what is ethical differs from case to case. On process, how to protect the ability of humans to play their moral role in decisions to use force must be considered. It is necessary to ensure there is space and time for the human to engage in the kind of reasoning that is needed to effectively exercise moral agency, thereby retaining human accountability.

The chair of the GGE, Mr. Ljupčo Jivan Gjorgjinski provided concluding observations. He noted that the reduced trust between States increased the complexity of the work of the GGE. The context-based nature of these questions also makes the GGE's task particularly complicated. Trading off the benefits and risks for militaries of sharing information on these systems is worth further exploration.