Permanent Representation
of the Federal Republic of Germany
to the Conference on Disarmament in Geneva

Statement

by

H.E. Ambassador Michael Biontino

Permanent Representative of Germany to the Conference on Disarmament

Geneva, 13 June 2016

INTERNATIONAL SECURITY FORUM

Challenges to the Global Security Architecture

LETHAL AUTONOMOUS WEAPONS SYSTEMS

Excellencies, Ladies and Gentlemen,

Thank you very much Madame Chair,

I am grateful to the International Security Forum for having invited me to speak about Lethal Autonomous Weapons Systems (LAWS).

In terms of the existing global security architecture, indeed, LAWS are one of the emerging major challenges. However, what complicates the task to come to a better understanding of these systems is the fact, that the challenges have quite a number of different facets:

- LAWS do not yet exist as such and weapons systems with certain veritable autonomous functions in are still only being developed. It is still unclear in which scenario, be it terrestrial, aerial or maritime, LAWS might become a military reality in the foreseeable future.
- We are still are struggling with a more precise definition which sets LAWS apart from other weapons systems, in particular remote controlled or automated systems.
- LAWS, if deployed, certainly would have to comply with International Humanitarian Law, in particular in terms of distinction, proportionality and precaution in attack. It is still somewhat unclear if and how LAWS could comply with these requirements.

- Alongside, important human rights and ethical issues arise from an eventual deployment of LAWS. Social acceptance of autonomous systems in general and in the military sphere in particular might change over time. However the fundamental ethical dilemma remains if lethal force can be delegated to autonomous weapons systems without the possibility of human intervention.
- Furthermore security issues need to be further explored. These include possible regional and/or global destabilization, proliferation risks and the military value versus risks due to the deployment of LAWS.

Over the last years these issues have been at the heart of a very intense discussion of civil society, academia and state actors in the framework of the Convention on Certain Conventional Weapons. Certainly, progress has been made in our understanding of LAWS. But certainly as well, it seems too early to draw final conclusions.

In particular when it comes to a possible regulatory framework for LAWS, be it a ban, a moratorium, transparency and confidence-building measures, standards for development, deployment and use, much more work has to be done before we can expect a wider consensus to emerge. In this context it is important to retain that a number of relevant state actors have already declared that they had no intention of developing such systems.

“Mapping Autonomy”

Concerning current development of autonomous systems it is essential to realize that these technologies are generally of a dual-use nature with potentially both civilian and military applications. Even if the latest developments in terms of civilian autonomous technologies are well known, there remain a number of unknowns with regard to what could be achieved in the future and the timescale involved. In terms of developing LAWS it is difficult to predict what the results would be or when they might be achieved.

For the time being our understanding is mainly based on, but limited as well by the characteristics of a number of existing systems (missiles, drones, land vehicles, mine search), which are used in certain operational contexts but cannot be categorized as LAWS, in order to evaluate the areas in which autonomous technology has progressed. Some of these existing systems have automatic functions (e.g. automatic target recognition, although still limited), and, although work is proceeding, this does not make them autonomous. In this context a clear distinction should be made between remote controlled, automated and autonomous systems. At present all existing systems continue to rely on human supervision, particularly in view of their technical limitations. In terms of developing autonomous technology, the following challenges remain: the reliability and comprehensiveness of communications with the human operator, the

risks of interference and detectability, delays in calculating algorithms in complex situations, the consideration of system or machine failures, and mobility in a complex environment unfamiliar to the system.

Furthermore limitations concerning the development of LAWS persist, which are related both to the systems themselves (e.g. their inability to handle unexpected situations, their weaknesses with regard to situational awareness and assessment, the need for faster processors able to deal quickly with complex algorithms), as well as to military culture (e.g. reluctance to lose control of a deployed system, lack of confidence in the capabilities of technologically complex systems).

In light of the above, certainly scepticism persists concerning the idea that completely autonomous systems could one day become a military reality.

“Towards a working definition”

A number of definitions for LAWS have been advanced so far. There is a widely shared view that a working definition or conceptual understanding of the characteristics of LAWS is necessary to frame and progress the discussions. However, since these systems do not yet exist and due to the fact that technology is continuing to evolve the general difficulty remains to define what are LAWS in the abstract.

Certainly a working definition would need to be sufficiently broad to encompass future developments in technology.

In the end, however, and as soon as a definition would be needed in a regulatory framework, the question of a definition is a political one, which needs to be negotiated since it determines the dividing line of which systems fall within the envisaged scope.

As the discussion stands right now, the normative approach seems to gain traction focussing on the relationship between the human operator and the machine regarding the level of human involvement in the use of force. An integral element of this approach is that human control must be maintained over weapon systems, regardless of whether this should be considered as “meaningful”, “appropriate” or “effective”. On the one side “meaningful human control” is proposed in the discussion as a framework to help advance an understanding around a threshold delineating acceptable or necessary levels of human control from those that are insufficient. A variant approach is the notion of “appropriate level of human judgment” which is required to ensure that a weapon functions as expected.

Alternatively it is suggested to focus on particular characteristics of LAWS, in particular the element of “autonomy”. Systems would be considered as autonomous when they operate

without human supervision from the moment of their activation. In this context there are differing views as to whether autonomy should be considered as a continuum and how to differentiate autonomous weapons systems in a spectrum that ranges from “automated” to “fully autonomous” systems.

Challenges to international humanitarian law

There is a common understanding that, as with all weapon systems, the rules of international humanitarian law are fully applicable to LAWS. Therefore the key question is whether weapons systems that select and attack targets autonomously would be able to comply with the rules of IHL.

In this context it can be argued that human judgment is necessary in order to assess the fundamental principles of proportionality, distinction and precautions in attack. This would imply that a human operator should always be involved in the application of force.

Furthermore it seems questionable if it would be possible to programme a legal assessment as required by IHL into a machine prior to its deployment, especially in complex and cluttered environments typical in conflict scenarios. Given the rapidly changing circumstances in a conflict, it might be difficult to conceive of a LAWS distinguishing between lawful and unlawful targets. For example, it remains unclear as to how LAWS could be programmed to recognize the surrender of a combatant or take feasible precautions in attack. Additionally, a potential target may alter its behaviour in order to deliberately confuse assessments made by a machine.

On the other side compliance with IHL might be enhanced through the use of LAWS. For example, when assisting a human operator to filter large amounts of data, LAWS could improve human sensor capabilities and increase precision in the delivery of force.

Legal weapons reviews, as required under customary IHL or by Art 36 of Additional Protocol I of the Geneva Conventions, remain a central tool to ensure that new weapon systems can be used in conformity with IHL. Concerning LAWS, however, these reviews are particularly challenging since they would have to cover methods and means of warfare and provide adequate assurance that these systems would predictably comply with IHL. Given that LAWS are assumed to be autonomous and therefore not entirely predictable in their actions, legal weapons reviews would have to be particularly stringent in order to exclude with an acceptable degree of certainty actions that would violate IHL. This has led to the view by some that current weapon review processes are insufficient to address LAWS, in particular since, despite being a legal obligation, such reviews are implemented by relatively few States and little information is available on

these processes which remain, in the absence of common standards, essentially national undertakings. Therefore, there could be an argument for developing a guide on legal weapons reviews that clarifies the legal landscape and, for example, compiling a list of best practices. These would be helpful to establish consistent, transparent and comprehensive standards and thereby strengthen the confidence in these processes.

Accountability is certainly a further central element in this context. Given the importance of ensuring an unequivocal accountability chain in the deployment of a weapon system, the question is whether the required standards of accountability and responsibility for the use of force and its effects can be upheld with the deployment of LAWS. In the case of an incident involving LAWS, it might be uncertain as to who would be held accountable within the chain of command or responsibility, such as the commander, programmer, or operator. It is undisputed, however that, if LAWS can be used in compliance with IHL, accountability issues could be addressed under international criminal law and the law of State responsibility.

Human Rights and Ethical Issues

In the discussion on LAWS concerns are voiced that the use of LAWS might severely impact human rights, in particular human dignity, the right to life and the right to physical integrity. Furthermore the argument was made, that the lawful use of force under international human rights law is limited to strict conditions, for example, to defend an imminent threat to life.

Furthermore, ethical concerns and the question if LAWS are morally acceptable need to be explored further. There seems to be an area of common understanding that delegating the decision over life and death of a human being to a machine would be unacceptable.

In this context ethical considerations might assist as well in determining a minimum threshold of human involvement. In this context, the concepts of “meaningful human control” or “appropriate level of human judgment” might provide an appropriate framework to develop such an ethical standard.

Ethical considerations can be considered necessary as well to give meaning to the open-ended principles contained in many principles and rules of IHL and ultimately aid

in determining the normative core of the law. This is important, inter alia, with regard to the application to LAWS of the Marten's Clause, i.e. the principles of "humanity" and "dictates of the public conscience". Here the question remains if ethical and moral standards can be programmed into a machine and if qualitative value judgements and proportionality assessments can be translated into software code.

A point to be taken into consideration as well is that the use of LAWS in relatively uncluttered environments, such as the maritime environment or desert areas which are less complex, will have consequences on the consideration of human rights and ethical issues. It could be argued that the deployment of LAWS in such environments would be less problematic than in other more cluttered scenarios since, for instance, the absence of civilians would simplify the task of distinction.

Security Issues

An essential element for further discussion remains the military value versus risks due to the deployment of LAWS. For example, increased capacities in the field of target selection would offer advantages in terms of avoiding collateral damages. This aspect is increasingly pursued by developers. At the same time, "autonomy" can refer to the lack of predictability of a system, which could be a reason why military commanders might be reluctant to use LAWS

It can be argued as well that the control over a system by military commanders is a core capability for the military and determines the value of such systems in specific tactical or strategic scenarios.

The operational concept of swarming merits specific attention, since in future scenarios, it might be unlikely that offensive measures will consist of single LAWS and instead, swarms of such systems with complementary capabilities might carry out attacks. Therefore, the assumed unpredictability of LAWS could be exacerbated in situations where multiple systems or swarms of systems interact. It would be unclear how in such scenarios meaningful human control could be maintained over the use of force, especially as the available time frame for human intervention is likely to be restricted. This would be exacerbated where speed becomes a motivation to deploy such systems in the first place.

Specific risks might be associated with the availability or deployment of LAWS even in relatively uncluttered environments such aerial or maritime scenarios. The need for split-second reactions could lead the operators, when confronted with a threat, to be more sensitive and to increasingly resort to pre-emptive action. This in turn might lead to situations of accelerated, or even unintended, escalation.

The risk of an arms race fuelled by the emerging development and eventual procurement of LAWS is a further element to be considered. Given that these systems are associated with specific military advantages, regional instabilities might arise or be exacerbated when these trends shift sensitive power balances. Whilst these systems might be available to technologically advanced countries in an initial phase, it is likely that they would proliferate and be more commonly available. Illegal transfers might mean that LAWS could become available to non-state actors such as terrorists. Given that for such actors there may be no incentive to abide by international norms this may further increase global or regional instability.

It can be argued that the military value and risks of LAWS might not be the same in symmetric conflicts as compared to asymmetric conflicts. Whereas the military advantage in symmetric conflicts might quickly erode, the gap between technologically advanced States with the ability to develop, procure and deploy LAWS and States without these capabilities could amplify the asymmetric character of armed conflicts in the future.

Conclusion

As already stated at the outset, further discussion is required on how the international community could or should react to emerging challenges to the global security architecture due to LAWS. While a number of actors maintain that the current IHL rules are sufficient to regulate the use of any type of weapon, including LAWS, others question whether this would be the case. This concerns in particular the question if existing legal weapons reviews are capable of addressing the potential challenges posed by LAWS.

However, in order to enter into a more concrete discussions about a regulatory framework at least a working definition for LAWS seems to be required.

In terms of the way ahead on LAWS, an obvious option is development of transparency and confidence-building measures and improved information sharing, particularly in the area of legal weapons reviews, including the establishment of best practices and benchmarks.

Given that LAWS could have a major impact on the conduct of future armed conflicts a preventive approach, possibly including a prohibition on the development, acquisition, trade, deployment and use of LAWS has been proposed as well, possibly including a moratorium until a regulatory framework is established.

However, there is hesitation regarding possible regulation of such systems given the lack of certainty about the nature of LAWS and the fact that they do not yet exist.

At the same time the dual-use character of civilian applications of autonomously operating technology and their benefits have to be adequately considered. There is a widely shared view that legitimate developments in the civilian sphere should not be hampered by regulatory measures taken with regard to LAWS. In this context, Protocol IV of the Convention on Certain Conventional Weapons (CCW) on blinding laser weapons could be an example of banning a future weapon category without curtailing research and development in the civilian sphere.

It seems that the CCW could be the appropriate forum for a continued discussion of LAWS due to its inclusiveness and its potential ability to strike the right balance between humanitarian and security concerns. I expect that in December 2016 the CCW Review Conference will decide to establish a Governmental Group of Experts with a specific mandate for that purpose.

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