

Some Considerations of the Impact of LAWS on International Security: Strategic Stability, Non-State Actors and Future Prospects

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Mister Chairman, Ladies and Gentlemen, I was asked to address the issue of the impact of Lethal Autonomous Weapons Systems (LAWS) on international peace and security. This topic is very wide and because of time constraints I have chosen to talk about three issues that have been partially addressed so far in the conference. These are the impact of LAWS on strategic stability and on the threshold to the use of force, the impact of LAWS falling into the hands of non-state actors and the impact of future technological developments of LAWS.

1. Impact of LAWS on strategic stability: impact on threshold to use force: deterrence and pre-emption

One crucial aspect of the development of new weapons for international security is their impact on strategic stability.

Strategic stability refers to “the condition that exists when two potential adversaries recognize that neither would gain an advantage if it were to begin a conflict with the other.”¹ Strategic stability is neither simple nor static, but should be viewed broadly as a result of effective deterrence.

Throughout history, the major military modes of achieving deterrence has been to build a military force large enough to establish the credibility of threatened punishment if vital interests are impinged upon.

During the Cold War, deterrence was thought of as a mechanism to prevent the opponent's use of nuclear weapons through the threat of retaliation. Maintaining a second strike capability was the cornerstone of the doctrine of Mutual Assured Destruction (MAD) and also the key enabler of strategic stability. Strategic stability was thus achieved by “making sure that each side has enough offensive forces to retaliate after a first strike and it assumes that

¹ Hildreth, Steven and Woolf, Amy. F (2010). *Ballistic Missile Defence and Offensive Arms Reductions : a Review of the Historical Record*. Washington : Congressional Research Service, p. 4.

neither side has the defensive capability to impede the other sides' ability to deliver its devastating retaliatory strike."²

Moving beyond the nuclear dimension, deterrence can be more generally defined as "the maintenance of such a posture that the opponent is not tempted to take any action which significantly impinges on his adversary's vital interests".³ Deterrence therefore relies on maintaining an offense-defense balance, which is in favor of the defense.

It follows that "conflict and war will be more likely when offense has the advantage, while peace and cooperation are more probable when defense has the advantage"⁴ An important consideration when it comes to LAWS is therefore the likely impact they will have on the offense-defense balance.

With the development of LAWS, the threshold for the use of force will likely be lowered and thus favor the offense for two reasons. Firstly, even if we manage to impose limitations on targeting (which is debatable if we think about the development of AI and superintelligence that I will address in the 3rd part of my presentation) which could be more discriminate indeed, the key problem remains that states will likely exercise less restraint in the use of these weapons because the social cost incurred is lowered by the fact that no human life will be put at risk on the attacker's side. One constraint in the use of LAWS is economic. One could argue that the economic price of these technologies is a significant restraining factor on the propensity of states using and developing them. While at the early stages of development of any technology, the initial cost may be high, however, as has been demonstrated with the development of the computer for instance, the high price of early adopters is greatly reduced over time. The same is likely to be true for LAWS, particularly because of the dual-use nature of their technology, greatly driven by the private sector.

Secondly, the offensive nature of these weapons is also strengthened by their likely tactical use, which relies on swarming tactics. The latter relies on overwhelming and saturating the adversary's defense system by coordinating and synchronizing a series of simultaneous and concentrated attacks. Such tactics are aimed at negating the advantage of any defensive posture.

If the offense-defense balance shifts towards the former, deterrence will no longer be the most effective way to guarantee territorial integrity. In an international environment that favors the offensive, the best strategy to counter the offensive use of force is one that relies on striking first. It follows that strategies of pre-emption are very likely to become the norm if LAWS are developed. Striking first before being attacked will provide a strategic advantage. The concept of pre-emption, however, is a clear violation of the current international regime on the use of force, which relies on self-defense and authorization granted by the UN Security Council and falling under the Chapter VII of the UN charter.

Another consequence of favoring offense is the greater likelihood of international arms races. As mentioned above, the ability to strike first represents a strategic advantage. In order to deny the adversary's ability to do the same, states are very likely to invest and improve current LAWS technology. This in turn is likely to initiate an arms race.

² Hildreth, Steven and Woolf, Amy. F (2010). *Ballistic Missile Defence and Offensive Arms Reductions: a Review of the Historical Record*. Washington: Congressional Research Service, p. 7. When security is achieved through deterrence by punishment "the ability to retaliate supports a defensive strategy, while the ability to deny retaliatory capabilities, that is, to limit damage, could support and offensive strategy". MAD therefore is defense-dominant as retaliatory capabilities dominate damage limitation capabilities. Glaser, Charles L. (2014). *Analyzing Strategic Nuclear Policy*. Princeton: Princeton University Press, pp. 106-107, see also, Jervis, Robert (1978). "Cooperation under the Security Dilemma," *World Politics*, vol. 30, no. 2, January, pp. 206-210.

³ Amoretta M Hoerber (1968): "Strategic Stability," *Air University Review*, July-August, <http://www.airpower.maxwell.af.mil/airchronicles/aureview/1968/jul-aug/hoerber.html>

⁴ Sean M. Lynn-Jones (1995). "Offense-Defense Theory and Its Critics", *Security Studies*, vol. 4, no. 4, p. 691.

When thinking about the impact of LAWS on strategic stability issues that have to be explored more in details concern:

- Under which circumstances will LAWS give offense or defense an advantage?
- Are LAWS inherently offensive dominant?
- What will be the characteristics of an arms race involving LAWS and how can we stop it?
- How will LAWS impact the rational of nuclear deterrence?
- How will LAWS impact pre-emption?

2. The impact of acquisition of these weapons by non-state actors

The discussion so far has assumed that states are the most important actors in international relations and international security. Since the end of the Cold War however, the nature of armed conflicts has profoundly evolved towards a greater importance played by non-state actors, insurgent and terrorist groups. One has therefore to think about how LAWS will affect these actors.

The use of swarming tactics by terrorist groups and non-state actors will be a major concern for the future use of LAWS. Swarming tactics are inherently asymmetrical because they involve the coordination and synchronization of a decentralized massive force aimed at saturating the adversary's defense system in order to induce its paralysis. Non-state actors have already used this type of strategy in the past. One could argue, for instance, that Al Qaeda through the use of coordinated attacks with hijacked civilian aircrafts against civilian targets in the USA on 9/11 resembles a swarming tactic. Similarly the coordinated and near simultaneous attacks on buses and trains in Madrid in 2004 and in London in 2005 could also be seen through the swarming lens. Yet, they do not represent true swarming tactics because they lacked the concentration of mass. In the cyber domain however, distributed denial-of-services (DDoS) attacks using botnets relies on true swarming tactics. These attacks saturate the targeted computer(s) or service with external communication requests to the point that the server is overloaded and is prevented from responding to legitimate traffic. Hackers and groups such as Anonymous very often used this kind of tactic.

Other recent examples of the use of swarming tactics include the black blockers protesters during various anti-globalization demonstrations such as in Seattle in 1999 or here in Geneva in 2003. Black blocs are "ad hoc assemblages of individuals or affinity groups that last for the duration of a march or rally in which members retain their anonymity via head-to-toe black clothing."⁵ They engage in direct actions against private and public properties, as well as security forces, without fear of arrest. The key enabler of their tactical show of force is mobile communication technology, which through the use of text messaging or messaging applications can instantaneously coordinate a mass of protesters without prior planning.

Swarming tactics have proved to be very effective. So far, however, the use of swarming tactics by non-state actors (terrorists, insurgents or activists) has not led to massive casualties (if we exclude the terrorist attacks mentioned previously as they do not truly represent swarming tactics). This could be a very different story if non-state actors, and especially terrorist organizations, could have access to LAWS.

During this conference, many contributions have underlined the absolute need to respect

⁵ Douglas-Bowers, Devon. (2014). "Unmasking the Black Bloc: Who They Are, What they Do, How they Work?", 18 December, <http://www.occupy.com/article/unmasking-black-bloc-who-they-are-what-they-do-how-they-work>

international humanitarian law for the engagement of LAWS. This position acknowledges that international law is the cornerstone of the modern regime on the use of force and its prohibition. Yet, from the terrorists' perspective, violations of international laws and humanitarian principles represent the core of their strategy, which aims at instilling fear and terror through the use of indiscriminate violence against innocent people. Current forms of terrorism such as those practiced by the Islamic State, Al Qaeda and their affiliate groups aim exactly at this: creating shock by violating key international and ethical principles.

The epitome of this approach is represented by the Islamic State or ISIS, which bases its strategy on escalating the use of indiscriminate violence so as to constantly hit the headlines and maintaining a climate of fear and terror. This has been evident in the multiple videos of group executions, beheadings, shootings or the burning of the Jordanian pilot alive released on social media.

When developing LAWS, states and the international community should think very carefully about the consequences of this technology falling into the hands of radical terrorist groups such as the Islamic State. These groups massively rely on suicide bombings for tactical reasons (breaching a front line, for instance) and strategic purposes (shocking the international community). The acquisition of LAWS by these groups would act as a massive force multiplier as they could use the same suicide bombing tactics but with a greater concentration of mass (since they would rely on more machine acting as "suicide bombers"). Moreover, this would also prevent them from losing their recruits and therefore improve their human capabilities.

It is evident that many obstacles should be removed in order for these terrorist organizations and other non-state actors to acquire LAWS. However, when faced with terrorist groups with a nihilist vision of the world, such as ISIS, one should not omit to reflect on LAWS falling into their hands.

This possibility should not be excluded. There have been instances of the acquisition of unmanned vehicles by terrorist groups or non-state actors. For example, in July 2014, a drone laden with explosives, hovering over Mafrqa, northeast of Amman was destroyed by the Jordanian Armed Forces.⁶ It is believed that ISIS operated it. Last month, a coalition aircraft destroyed a drone operated by ISIS that was probably used for surveillance and reconnaissance purposes near the Iraqi city of Fallujah.⁷ One of these drones was bought 'off-the-shelf', while the other was either captured or smuggled into the country and modified so that it could carry explosives. On March 22, a Shiite militia group, Saraya Al Salam, staged a demonstration of two unmanned ground vehicles equipped with machine guns in Iraq.⁸ Though the efficiency of these weapons is debatable, non-state actors have shown their determination to acquire and use these technologies. It is doubtful that these groups will be able to develop their own research and development capabilities regarding LAWS. However one can assume that they might be able to acquire LAWS through different channels. They could benefit from transfer of technology from supporting states, as has been the case in the past for state sponsored terrorism. They could gain access to weapons depots after territorial gains, as it has been the case with ISIS in Iraq or with the Houthis and their allies recently in Yemen. Finally, as or if the technology democratizes one cannot exclude the prospect that

⁶ Al Arabiya News (2015). "Jordan Shoots Down Drone Near Syria Border", *Al Arabiya News* 25 July, <http://english.alarabiya.net/en/News/middle-east/2014/07/25/Jordan-shoots-down-drone-near-al-Mafrqa.html>

⁷ Harper, Jon (2015). "Airstrike Destroys Islamic State Drone", *Stars and Stripes*, 18 March, <http://www.stripes.com/news/airstrike-destroys-islamic-state-drone-1.335328>

⁸ France 24 (2015). "Is an Iraqi Militia Really Using High-Tech Combat Robots", *France 24*, 26 March, <http://observers.france24.com/content/20150326-iraq-militia-video-robots-combat-drone>

they could buy LAWS off-the-shelf.

When thinking about the impact of non-state actors acquiring LAWS, issues that have to be explored more in details concern:

- 1) The likelihood and feasibility of non-state actors being able to gain access to LAWS technology
- 2) The technical impediments for non-state actors acquiring and using this technology
- 3) The impact of swarming tactics using LAWS for terrorist activities?
- 4) The impact of swarming tactics using LAWS for counter-terrorist efforts?

3. Future prospects: rise of super intelligence and impact on LAWS and international security

Most of the discussions so far have relied on the assumption that LAWS will abide by the rules of international humanitarian law because it will be designed accordingly. However, at the risk of being provocative, what if this is not the case? I will offer four cases that could challenge this assumption:

In the first part of my discussion I suggested that LAWS favor the offense in the offense-defense balance, and thus have the potential to promote arms races. Arms races can have two effects: they can increase the quantity of weapons or improve their quality. During the Cold War the international community witnessed both. When it comes to LAWS one has to question what qualitative improvement would mean in an arms race involving LAWS. At one point in the race, it would not be too far fetched to imagine that in order to gain a strategic advantage, states would get rid of the constraint imposed by international limitations. Or, as was the case with the United States with the Strategic Defense Initiative (SDI) during the Cold War, a state could decide to develop a new technology that would upset the strategic balance in its favor. In these circumstances, who could guarantee that the principle agreed upon for the development of LAWS would be respected if a state sees a strategic advantage in violating them?

Most of the discussions, so far, have assumed that states will be in control of these technologies. It has also been said that the main driver for the development of LAWS is the private sector. Let me please make two observations. If the private sector is the main driver, which safeguards can be put in place so that the limitations imposed on the LAWS will always be respected? Secondly, an increasing number of innovations are open-source nowadays. If we take the example of 3D printing, in 2012 a student published open source gun designs suitable for 3D printing after having demonstrated that he had himself printed the gun. What kind of safeguards could be put in place in order to prevent this from happening with LAWS?

Thirdly, discussions so far have been very much state centric. They assume that states ultimately will be in control of LAWS. But what if there was a breach of security and LAWS are hacked, and hackers are able to re-program LAWS remotely. Stories of successful hacks of corporate and defense industries, as well as states, abound. Why would LAWS be different?

Finally, LAWS rely on artificial intelligence. Some scholars predict that in the near future, due to the growing power of computers, we will be able to reach artificial super intelligence defined as “an intellect that is much smarter than the best human brains in practically every

field, including scientific creativity, general wisdom and social skills”⁹ From a security perspective, involving LAWS this is a worrying prospect. Indeed who can guarantee that super intelligence cannot emerge spontaneously in a military robot in the future?

To conclude, the impact of LAWS on international security has the potential to be very destabilizing for the international system be it because it can upset the strategic balance and favor an offensive defense posture favoring pre-emptive strategies or because these technologies could be used beyond their intended limitations shall they fall into the hands of non-state actors or terrorist organizations. Moreover with the rapid pace of current technological developments that could be exacerbated in the case of an arms race, one cannot guarantee that their original intended limitations will be respected in the future. It follows that the international community should be very careful when considering the development of LAWS and avoid contributing to create a situation where a return to the situation ex-ante will be very difficult or even impossible.

⁹ Urban, Tim (2015). “The AI Revolution: the Road to Superintelligence”. <http://waitbutwhy.com/2015/01/artificial-intelligence-revolution-1.html>, see also Bostrom, Nick (2014). *Superintelligence, Paths, Dangers, Strategies*. Oxford: Oxford University Press.