CNA
ANALYSIS & SOLUTIONS

# ARMS CONTROL AND LETHAL AUTONOMY

## THE PAST POINTS TOWARD THE FUTURE

In the coming years, lethal autonomous weapons systems are likely to have a revolutionary impact on warfare. These weapons can attack targets based on artificial intelligence, without direct control by humans. Fear of their potential for unintended consequences has led to calls for a ban on autonomous weapons. What should the U.S. expect of such arms control negotiations? What role can the U.S. play in talks when autonomous weapons are at the core of the Third Offset plan to modernize U.S. national security?

CNA addresses these questions by analyzing the record of six previous international arms control agreements. These agreements imposed bans or limitations on conventional weapons such as chemical weapons, cluster bombs, blinding lasers, incendiary bombs and land mines, among others.

Participation in past agreements suggests that if an international ban on autonomous lethal weapons is negotiated, states such as North Korea, Syria and Iran may not commit to uphold it. North Korea is not a signatory to any of the six agreements. Iran and Syria signed only one of them. Such holdouts suggest that if a restriction on lethal autonomous weapons is agreed to, the U.S. should still expect to encounter these weapons on the future battlefield and should prepare accordingly to defend against them.

Contrary to the common perception that the U.S. is more likely to participate in arms control than Russia or China, precedent indicates that the three major powers are prone to take the same decision on whether or not to sign an agreement. These three states all signed five of the agreements, while all declined to sign the Cluster Munitions Convention of 2008.

Lessons from the Cluster Munitions Convention may be particularly pertinent to the discussions to limit lethal autonomous weapon systems (LAWS). In negotiations, the U.S. did not persuasively argue the humanitarian case for a narrow ban on indiscriminate cluster bombs, which would have allowed new technology that addressed humanitarian concerns to produce fewer civilian casualties than other conventional weapons. When a broad ban passed, outlawing even those cluster munitions designed to reduce civilian casualties, the U.S. government then refused to sign. Being on the outside of an arms control agreement ratified by more than a hundred countries has harmed the nation's international reputation. The broad ban also represents a missed opportunity for sparing civilians and promoting humanity in war. In order to avoid similar problems with any future LAWS agreement, U.S. negotiators should seize opportunities both to influence those discussions so that the U.S. is not marginalized and to ensure that agreements are effective in promoting humanitarian objectives.

It would be a difficult decision for the U.S. military to support a broad ban on LAWS, since lethal autonomy is central to its current national defense strategy — and is hotly pursued by potential adversaries. If history repeats itself, and Washington is confronted with a LAWS ban that it is reluctant to sign, the aftermath of the Cluster Munitions Convention offers another interesting lesson. In 2008, the government stated that it shared the humanitarian goals of the convention, and developed its own cluster munitions policy that restricts the munitions it can procure and use. The U.S. could use a similar approach if it finds itself unwilling to support a LAWS ban that is adopted internationally.

Such unilateral policies could also establish a model for the international community. For example, the United States should incorporate a data recording function into weapons to document whether engagement decisions were made autonomously or by humans. Unlike chemical weapons or cluster bombs, the use of lethal autonomy is a software action that leaves no trace, unless the weapon is designed for data recording. As a result, such a feature is necessary for accountability and learning.

The history of opposition to the use of drones is another case that argues for U.S. government engagement with the humanitarian community seeking restrictions on weapon systems. (Note that drones such as Predator aircraft are not autonomous weapons, since they are controlled remotely by "pilots" on the ground.) Some NGOs were calling for international restrictions on the use of armed drones after U.S. counterterrorism operations began using them to target combatants outside of declared conflict zones.

But the U.S. took a proactive approach to establish best practices, introducing strict standards for target identification and avoiding civilians. As civilian casualties from these operations were seen to decrease, both international and domestic criticism of U.S. drone operations decreased, and interest in international restrictions on armed drones declined. The example of armed drones illustrates how measures to establish responsible behavior and transparency with a weapon type can serve as a potential model for others, while freeing the military to take action as necessary. The U.S. could use a similar approach to make the case for freedom of action for autonomous weapons.

# RECOMMENDATIONS

- The U.S. military should prepare contingency plans and capabilities to help defend against adversary LAWS on the battlefield, regardless of whether the use of such weapon systems is restricted by international agreement.
- The U.S. should monitor adversary LAWS development by states of concern, including system capabilities, doctrine, and tactics, to inform potential defensive measures.
- The U.S. should work to positively influence international discussions regarding LAWS, such as in the CCW, with the aim of promoting humanitarian objectives while preserving freedom of action consistent with U.S. principles and values.
- The U.S. should take steps to address allegations of LAWS use: weapon systems that can potentially use lethal autonomy should have a data recording function that records information regarding engagements, including whether engagement decisions were made autonomously.
- The U.S. should engage with key allies regarding LAWS policy, and discuss how to address policy differences in coalition operations and in potential LAWS restrictions.

# CNA CENTER FOR AUTONOMY AND AI

CNA's Center for Autonomy and Artificial Intelligence supports the U.S. goal of effectively incorporating autonomy, AI, and related technologies in military capabilities. Throughout history, the ability to adapt technological advances to warfighting has led to fundamental changes in how war is conducted and the tools used in its conduct. Autonomy and AI represent revolutionary technologies in warfare which offer opportunities to the U.S. for countering and deterring emerging threats, addressing security challenges and advancing U.S. national interests. But this opportunity is by no means certain, since autonomy also offers potential asymmetric advantages to near-peer competitors, some of which have been pursuing these capabilities aggressively. Likewise, rapid innovation in the private sector and a commercial research and development sector dwarfing that of the U.S. military create new challenges for the U.S., which will need to quickly identify and integrate cutting edge technological developments in this rapidly changing environment.

Because of the foundational impact autonomy and artificial intelligence will have on the character of warfare, CNA created the Center for Autonomy and AI to focus on these emerging technologies and their contribution to national security. The Center capitalizes on the ability to leverage the scientists and analysts of CNA's staff of 600, with their experience base in military operations, test and evaluation, security and intelligence analyses, technology assessment, and autonomy and AI.

## ABOUT CNA CORPORATION

CNA is a not-for-profit research and analysis organization with 75 years of experience providing government agencies with data-driven insights and real-world, actionable solutions grounded in our direct experience with the operational environments where these solutions are applied. CNA developed the foundational techniques for operational analysis to address complex challenges facing government programs. We have applied these techniques successfully in areas ranging from defense to aviation, education, justice, and homeland security.

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