



CCW REPORT

Civil society perspectives on the CCW meeting of experts
on autonomous weapon systems
11-15 April 2016



Reaching Critical Will

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The CCW Report is produced by the Reaching Critical Will programme of the Women's International League for Peace and Freedom (WILPF), a member of the Campaign to Stop Killer Robots.

EDITORIAL: SEEKING ACTION ON AUTONOMOUS WEAPONS

Ray Acheson | Reaching Critical Will of WILPF

The third UN meeting on lethal autonomous weapon systems (LAWS) opened on Monday morning with a general discussion by states. Once again, the majority of delegates taking the floor agreed that human beings must always be responsible for the use of force, in particular over decisions about life and death. Some states indicated their support for preventing the development and deployment of LAWS, which would operate without meaningful human control, through a multilateral instrument. A handful of delegations reiterated their well-known arguments against such an instrument. However, a reflection on their policies, consideration of the state of technological development, and recognition of the majority opinion in favour of retaining meaningful human control over individual attacks would seem to highlight problems with these positions rather than critical divisions amongst states within the CCW.

Arguments against action

The following represent some of the well-rehearsed arguments heard on Monday against the development of new law prohibiting the development and deployment of LAWS.

The technology is far away

Some states, such as Israel, Japan, Russia, Spain, and the United Kingdom, argue that LAWS are a possibility of the distant future and may never exist at all. Yet the United States has a list of existing weapon systems it considers beyond the remit of LAWS discussions, such as armed drones, the Patriot or Aegis missile defence systems, or torpedoes. The existence of such weapon systems indicates that the development of fully autonomous weapons is not so distant after all.

The UK is already investing in the development of a weapon system, the Taranis, which has included the testing of auton-

omous capabilities including target location and engagement. Israel operates the Harpy drone, which automatically detects, attacks, and destroys radar emitters. The US Phalanx system for Aegis cruisers automatically detects, tracks, and engages anti-ship missiles and aircraft. Further, as Sierra Leone noted, increasing the autonomy of existing systems could turn them into fully autonomous systems, warranting their inclusion in on-going talks.

States have "no plans" to develop LAWS

Over the past few years a number of states have been vague in their orientation toward the possible development of LAWS. The US, for example, has a policy that neither encourages nor prohibits the development of LAWS and indicates it will review any applications to develop such technology. Japan says it "has no plans to develop robots out of the loop, which may be capable of committing murder." Others have been more emphatic, such as the UK, which has declared that it will never deploy weapons without human control.

Yet even where states make such declarations, questions remain about their interpretation of human control. As explained by the UK-based NGO Article 36, "UK policy has not yet provided an explanation of what would constitute human control over weapons systems whilst at the same time suggesting a narrow and futuristic concept of LAWS that appears permissive towards the development of weapons systems that might have the capacity to operate without the necessary levels of human control."

Existing law is adequate to regulate development and use of LAWS

Some states have suggested they believe all weapons should have meaningful human control yet do not support the development of new law in this direction.

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CAMPAIGN TO STOP
KILLER ROBOTS

Editorial, continued

The Netherlands indicates it does not support the deployment of weapons without human control, but also does not support a moratorium on the development of specific technologies at this time. Turkey says it supports human control over weapons, but is hesitant about a preemptive prohibition of LAWS because they are “hypothetical”. Canada says it does not support banning LAWS, even while it acknowledges challenges LAWS would pose to national level weapon reviews such as those mandated by article 36 of the 1977 Additional Protocol I of the Geneva Conventions, particularly around testing of these systems.

A number of states and civil society actors have pointed out other potential problems with relying on article 36 reviews as a response to LAWS. For example, the NGO that takes its name from the legal provision requiring weapon reviews argues that given the global implications of LAWS, decisions about their development must not reside solely with the states considering their acquisition. In addition, “narrow interpretations and inconsistent outcomes across states ... could lead to the introduction of unacceptable technologies.” Furthermore, the development of LAWS would represent “an unprecedented shift in human control over the use of force,” which raises ethical, political, and legal concerns that may go beyond specific weapon systems under review.

Existing law applies

An even less helpful variation of the argument that existing law is adequate to regulate LAWS is that existing international law applies to LAWS. To what weapon system would existing law not apply? Should we really be worried that entire weapons, means, or methods of warfare might somehow be unshackled from the law? If so, we have a bigger problem than how to deal with autonomous weapons.

This argument has perhaps become conflated with the idea that LAWS could potentially be programmed to respect international humanitarian law or human rights law. However, as Article 36 has argued before, “Processes of calculation and computation in a machine are not equivalent to deliberative human reasoning within a social framework. Machines do not make ‘legal judgments’ and ‘apply legal rules’.” Law is written by and for humans, as Ecuador argued on Monday. Without human deliberation, law does not retain its meaning.

A more credible approach to LAWS

In contrast to these arguments, most states addressing the meeting expressed concern with the idea of weapons operating without meaningful human control. Most also gave support for the Convention on Certain Conventional Weapons (CCW) Review Conference in December to establish a Group of Governmental Experts formally to address this issue in 2017. There appear to be a variety of expectations of what such a GGE could do, with a handful of states encouraging the development of transparency and confidence-building measures and clear definitions of technologies and terminologies. However, several states are supportive of initiating negotiations to prohibit autonomous weapons, citing the precedent of the preemptive prohibition on blinding laser weapons.

These states raise critical concerns associated with the potential development and deployment of LAWS. Sri Lanka highlighted the threats that LAWS pose to global peace and security, proliferation, and lowering the threshold for warfare. Pakistan argued that introducing LAWS on the battlefield would be a step backwards from norms and laws of warfare that the international community has built over time. Ecuador outlined a number of concerns about ethics and morality, accountability, transparency, and compliance with IHL and human rights. These states, together with Costa Rica and the Holy See, argued for a prohibition on autonomous weapons. The Holy See noted that most weapon prohibitions come after mass devastation caused by that weapon and argued that prevention is the only viable approach with LAWS.

As we wrote in the CCW Report last year, the CCW affirms the “need to continue the codification and progressive development of the rules of international law applicable in armed conflict.” This recognition that the law is not static and that the general rules of armed conflict are not wholly sufficient to address the problems raised by certain weapon technologies is the cornerstone of the CCW regime. Yet as Austria noted on Monday, technology is outpacing diplomatic deliberations. Urgent action for agreement on concrete measures preventing the development and deployment of LAWS is needed now. •

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EVENT: THE WEAPONISATION OF INCREASINGLY AUTONOMOUS TECHNOLOGIES - UNDERSTANDING DIFFERENT TYPES OF RISKS

Jessica Lawson | *Reaching Critical Will of WILPF*

This panel event highlighted some of the different types of potential risks that lethal autonomous weapon systems (LAWS) pose and how those risks might be managed, mitigated, reduced, or eliminated. The event was chaired by UNIDIR's Kertin Vignard, who mentioned at the beginning that the topic of LAWS has been on the radar at UNIDIR for some time now.

The first presentation was by John Borrie from UNIDIR, who discussed the notion of "unintentional risk." He raised the issue of the responsibility or accountability gap in regards to LAWS, particularly when machines do not behave in the way they are intended to.

He posed some guiding questions for discussions on LAWS, including:

- How could systems behave in ways not intended by their human designers or operators?
- Have the unintentional risks been properly mapped and understood?
- Do these unintentional risks deserve serious policy considerations as LAWS develop?

The purpose on this presentation was to demonstrate that it may not be possible to effectively predict and control LAWS, and that it may be difficult to diagnose and respond to automated systems. For this reason, there is always going to be the potential for catastrophic consequences. The presentation concluded with the suggestion that there is a need for collective reflection among policy-makers about how much risk exists, or at least what those risks are going to involve.

Heather M. Roff of Oxford University and Arizona State University then presented on "Autonomous Weapons: Risk, Foreseeability and Choice". Her presentation discussed the importance of defining risk. For example, are we talking about bodily harm, unintentional engagements, escalation, proliferation, or blowback (the unintended results of a political action or situation, which is not limited to the proximate effects of an action)? Or are we talking about all of the above? The presentation discussed risks associated with miniaturization, persistence, and learning.

Paul Scharre from the Center for a New American Security then presented on "Flash War: Autonomous Weapons and Strategic Stability". This discussion largely focused on unique challenges posed by LAWS on strategic stability. He used examples such as the 1983 Soviet Nuclear incident, whereby Soviet satellites were falsely detecting sunlight reflecting off cloud tops as ICBM launches. In this case, full-scale nuclear war was avoided thanks to the instinctive decision of Colonel Petrov. Paul Scharre posed the question: what would a machine have done in this

situation? The answer is, it would have done what it has been programmed to do, which is to retaliate. This highlighted the problem of placing the responsibility of human lives on a machine.

Finally, Wendell Wallach from Yale University's Interdisciplinary Center for Bioethics presented on "Mapping a way forward". His discussion argued that LAWS are deeply problematic, since when we are talking about lethal autonomy, we are not talking about a particular weapon system, but rather, lethal autonomy as a feature that can be added to any weapon system – from a machine gun to a nuclear missile. Wallach argued that machines must not make choices that result in the death of humans – not just because they are machines, but also because they are unpredictable and cannot ever be fully controlled. He suggested that a prohibition on autonomous weapons should ban all weapons without meaningful human control, and that for any weapon system to be considered legal it would have to demonstrate that it operates within that parameter.

Some issues raised in the general discussion part of the event include the distinction between the terms "autonomous" and "automated" and that essentially the main concern with LAWS is about the level of control rather than the level of intelligence.

There was also some agreement on the concern posed by Mr. Wallach about the fact that this technology can in fact make any weapon autonomous. There were also some concerns raised about the lack of meaningful human control since, when machines fail, they cannot be held responsible and they lack the emotional and instinctive judgment ability that humans are capable of. •

CALENDAR OF EVENTS

When	What	Where	Who
10:00-13:00	Towards a working definition of LAWS	Conference Room XVIII	
13:10-14:50	Private sector perspectives on the development of Lethal Autonomous Systems	Conference Room XXIV	Germany, World Economic Forum
15:00-18:00	Towards a working definition of LAWS	Conference Room XVIII	



NEWS IN BRIEF*Mia Gandenberger | Reaching Critical Will of WILPF*

The News in Brief is not a comprehensive summary of all statements. It highlights positions on a few critical issues covered during plenary discussions.

General debate*Definitions*

- Japan underlined the importance of clarifying the definitions of LAWS and establishing a common understanding of these systems.
- Switzerland questioned the limitation on “lethal” autonomous weapon systems and called for an inclusive understanding, including less than lethal functions.
- Poland, Netherlands, Finland, Turkey, Spain, ROK called for clarifying definitions of autonomous weapons and meaningful human control.

The way ahead

- Switzerland, Pakistan, South Africa, Costa Rica, Canada, Austria, Finland, New Zealand, and Ecuador supported the establishment of a Group of Governmental Experts (GGE) at the upcoming review conference of the CCW.
- Switzerland further suggested the development of standard methods and protocols for testing LAWS.
- China, Sri Lanka, Zambia did not think national regulations to be sufficient.
- Algeria, China, Costa Rica, Cuba, Ecuador, Holy See, Pakistan, Sri Lanka called for a preemptive ban of LAWS.
- Zambia suggested prohibiting LAWS should be on the CCW agenda to help mitigate fears over them.
- Canada, Netherlands did not support banning technology, especially dual-use technology.
- Israel, Turkey were not in favour of a preemptive prohibition.
- Algeria, Ecuador called for a moratorium to suspend any development of these systems.
- Australia called for examination of the legal, ethical, and socio-cultural constraints on development of LAWS, including the dictates of public conscience and ethical concerns with these systems.

Meaningful human control (MHC)

- Japan thought the relationship of MHC and autonomy are instrumental for defining LAWS and said it has no plans to deploy weapons without humans in the loop.
- France, Sweden, Germany stressed the importance of ensuring that control is exerted over the

use of force, in particular questions of life and death.

- Netherlands did not support the deployment of weapons without meaningful human control.
- Ireland stressed all weapons should remain under MHC.
- Russia thought it necessary to preserve human responsibility for the use of weapons.
- Morocco affirmed the importance of human control in discussions on LAWS and stressed the importance of accountability.
- Austria, Costa Rica stressed that IHL requires human control over the use of force.
- Israel said human control over weapons is necessary.
- UK said it would never deploy weapons without human control.
- USA called for appropriate levels of human judgment over weapons.

International human rights law (IHRL)

- Ireland called for the debate to focus on compliance with both IHL and IRHL and expressed concern about the potential use of LAWS outside of armed conflict, such as law enforcement.
- Algeria, Ireland suggested LAWS should also be discussed in the Human Rights Council.
- Austria recalled the letter by AI scientists about autonomous weapons, as well as the most recent report by Special Rapporteur Christoph Heyns to the March session of the Human Rights Council.
- Sierra Leone also recalled the Special Rapporteur’s work and the human rights aspects of LAWS.
- Ecuador explained that the use of LAWS could lead to the violation of human rights.

International humanitarian law (IHL)

- Switzerland stressed that IHL fully applies to the use of LAWS and must be respected, suggesting a compliance-based approach.
- Mexico argued that weapons being developed must comply with IHL and reminded the meeting that there is no legal framework for legal responsibility with regards to LAWS.
- South Africa stressed that all methods and means of warfare must comply with IHL and human rights.
- Russia stressed the need for strict compliance with existing international obligations.

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News in brief, continued

- ROK underlined that should LAWS become available their use would have to comply with international law, IHL in particular.
- Finland stressed the importance of adhering to IHL in all situations, including when LAWS would be used in conflict.
- New Zealand thought it an essential requirement for all weapons development and use to take place in compliance with IHL.
- Turkey thought current IHL is sufficient to address LAWS but is open to further study.
- Ecuador laid out some aspects of IHL that could not be sufficiently respected by using LAWS, such as proportionality, accountability, transparency, and others.

Other

- Sri Lanka called for a clear accountability trail for the use of all weapons.
- USA has established a national process for considering proposals to develop LAWS, which neither encourages nor prohibits their development.
- Italy has started an in-depth interagency analysis of LAWS including of the private sector.
- France, UK, Israel, Spain thought LAWS to be a concern of the future.
- USA stressed the meeting should focus on emerging technologies only, not a number of existing systems with some lower levels of autonomy.
- Israel suggested that LAWS might have military and humanitarian advantages.
- Spain suggested it is important to consider the context (offensive or defensive) in which LAWS could be applied.
- Ecuador, Sierra Leone, Sri Lanka highlighted the risk of possible diversion to non-state actors.

Mapping autonomy

- Mr. Vincent Boulanin of the Stockholm International Peace Research Institute gave an overview of autonomy and mobility by focusing on self-mobility, multi-agent collaborations, and situational awareness.
- Ms. Heather M. Roff presented her findings of missile technology developments and general trends and patterns that showed an increase
- Mr. Markus Höpflinger of Armasuisse addressed trends in mobile systems and reviewed ongoing research topics on increasing autonomy and automation, human machine teaming, machine/machine teaming, mobility in rough terrain, and machine learning.

- Mr. D Hynchul Shim focused on civil sphere aerospace vehicles and international trends in their use.
- Mr. Leon Kester reviewed developments in the applications of autonomy, such as automation, learning, and self-determination. Further he discussed the role of humans in connection with autonomous systems, highlighting in particular the challenges surrounding the control of autonomy itself.
- Mr. Didier Danet presented research on the automation of the terrestrial battlefield and in particular the challenges his team faced in conducting this research, such as measuring autonomy, the complexity of conflict, and the questionable military usefulness of LAWS.
- In responding to questions by New Zealand and Egypt, Dr. Roff explained that irrespective of the weights, the increasing trend of autonomy would remain. Looking ahead, developments would very much depend on the intentions of states and the cost-effectiveness of systems in comparison to their benefits, as that had been one of the main drivers in the past.
- Sierra Leone welcomed the clarification that it is functions that are made autonomous, which would cause some systems of increasing autonomy to fall under LAWS if attention were paid to critical functions.
- In response, Mr. Boulain reiterated that defining autonomy remains a contested notion and solely looking at critical functions might not be enough.
- Mr. Kester and Mr. Shim argued that in the future any type of human capability could be exercised by machines.
- Japan and India sought clarification on the military utility of LAWS and Mr. Danet highlighted unpredictability as one major issue in that context.
- Egypt argued that LAWS should be banned.
- In responding, Mr. Kester thought it difficult to ban something so undefined.
- Dr. Roff called on states to agree on certain critical functions, such as selecting and attacking or engaging targets, that would need to have MHC and otherwise would have to be prohibited.
- Mr. Boulain said it was up to member states to conclude the best way forward, but highlighted legal reviews as an important measure pending a decision. •



This open letter was announced July 28 at the opening of the IJCAI 2015 conference on July 28.

Journalists who wish to see the press release may contact Toby Walsh.

Hosting, signature verification and list management are supported by FLI; for administrative questions about this letter, please contact Max Tegmark.

AUTONOMOUS WEAPONS: AN OPEN LETTER FROM AI & ROBOTICS RESEARCHERS

Autonomous weapons select and engage targets without human intervention. They might include, for example, armed quadcopters that can search for and eliminate people meeting certain pre-defined criteria, but do not include cruise missiles or remotely piloted drones for which humans make all targeting decisions. Artificial Intelligence (AI) technology has reached a point where the deployment of such systems is — practically if not legally — feasible within years, not decades, and the stakes are high: autonomous weapons have been described as the third revolution in warfare, after gunpowder and nuclear arms.

Many arguments have been made for and against autonomous weapons, for example that replacing human soldiers by machines is good by reducing casualties for the owner but bad by thereby lowering the threshold for going to battle. The key question for humanity today is whether to start a global AI arms race or to prevent it from starting. If any major military power pushes ahead with AI weapon development, a global arms race is virtually inevitable, and the endpoint of this technological trajectory is obvious: autonomous weapons will become the Kalashnikovs of tomorrow. Unlike nuclear weapons, they require no costly or hard-to-obtain raw materials, so they will become ubiquitous and cheap for all significant military powers to mass-produce. It will only be a matter of time until they appear on the black market and in the hands of terrorists, dictators wishing to better control their populace, warlords wishing to perpetrate ethnic cleansing, etc. Autonomous weapons are ideal for tasks such as assassinations, destabilizing nations, subduing populations and selectively killing a particular ethnic group. We therefore believe that a military AI arms race would not be beneficial for humanity. There are many ways in which AI can make battlefields safer for humans, especially civilians, without creating new tools for killing people.

Just as most chemists and biologists have no interest in building chemical or biological weapons, most AI researchers have no interest in building AI weapons — and do not want others to tarnish their field by doing so, potentially creating a major public backlash against AI that curtails its future societal benefits. Indeed, chemists and biologists have broadly supported international agreements that have successfully prohibited chemical and biological weapons, just as most physicists supported the treaties banning space-based nuclear weapons and blinding laser weapons.

In summary, we believe that AI has great potential to benefit humanity in many ways, and that the goal of the field should be to do so. Starting a military AI arms race is a bad idea, and should be prevented by a ban on offensive autonomous weapons beyond meaningful human control.

For a list of signatories go to <http://futureoflife.org/open-letter-autonomous-weapons/>