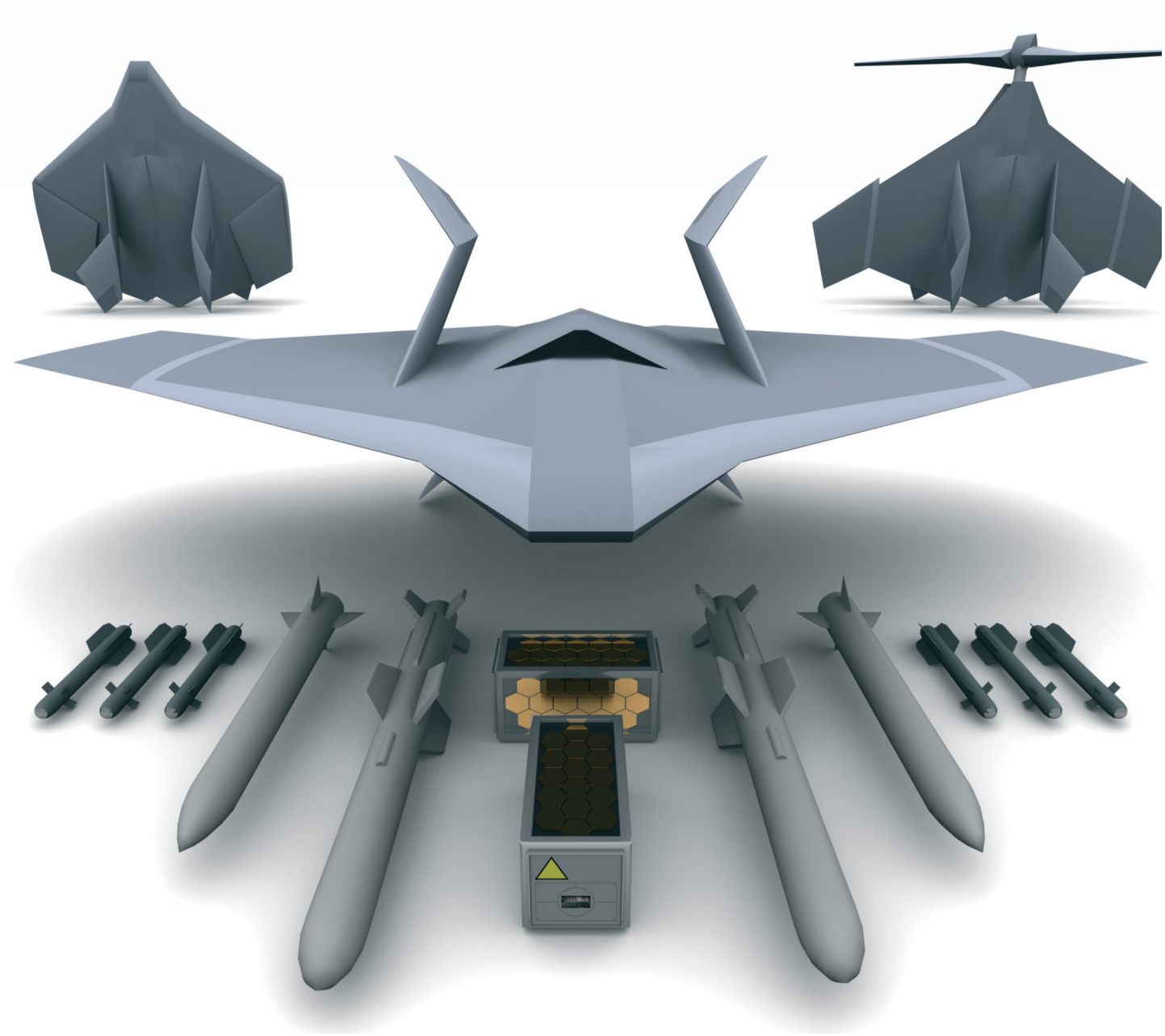

Killer robots:

who is making the decisions?

UNA-UK briefing on lethal autonomous weapons systems and international action to prevent the threat

UNA-UK

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About UNA-UK

Founded in 1945, the United Nations Association – UK (UNA-UK) is the country's foremost advocate for UK action at the UN, the UK's leading source of analysis on the UN and a vibrant grassroots movement of 20,000 people from all walks of life.

We are the only charity in the UK devoted to building support for an effective UN. We want to see a world where global citizens are empowered to hold their governments to account, where leaders collaborate for the good of people everywhere and where the UK lives up to its responsibilities on the world stage.

We have worked on arms control issues since UNA-UK was founded, campaigning together with our supporters on issues including nuclear disarmament, landmines, cluster munitions and conventional weapons.

UNA-UK is a charitable company limited by guarantee (no.1146016). We are completely independent of the UN and receive no funding from it.

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United Nations Association – UK

September 2018

Introduction

Over the past decade, concerns about the emergence of new weapons systems with increasing autonomy have seized the attention of the international community. Since 2014, this issue has been the subject of discussions at the United Nations (UN) under the auspices of the Convention on Certain Conventional Weapons which aims to ban or restrict the use of inhumane weapons.

As a civil society organisation with a strong track record on arms control, including on nuclear weapons, landmines, cluster munitions and conventional arms, the United Nations Association – UK (UNA-UK) advocates for UK action in support of disarmament initiatives which will help bring about a safer, fairer more sustainable world. Together with our 20,000 supporters across the UK, we campaign for a multilateralist Britain which champions cooperative action to address global threats.

This briefing considers one such threat: the prospect of so-called 'killer robots'. In doing so, we consider the current debate around autonomy in weapons systems and look at opportunities for the UK to play a progressive role on the world stage to address the potential threats they pose.

"UNA-UK advocates for UK action in support of disarmament initiatives which will help bring about a safer, fairer more sustainable world."

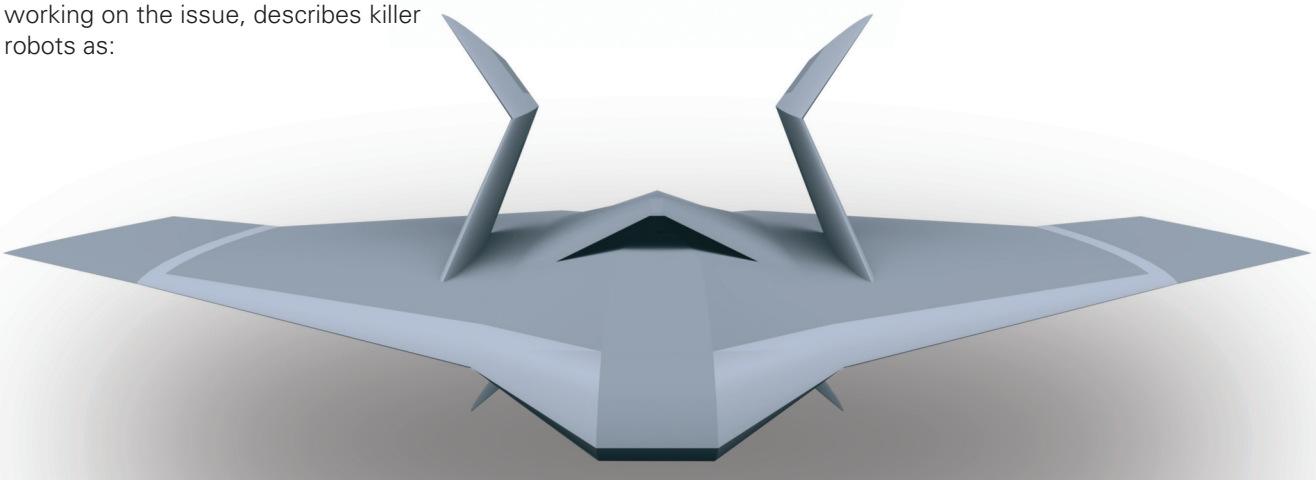
What are killer robots?

'Killer robots' is a colloquial term used to refer to lethal autonomous weapons systems. There is some debate as to extent to which existing weapons can be described as being 'autonomous'. However, rapid technological developments and defence sector investments are driving concerns that they will soon be a reality. While there is no agreed international treaty governing such weapons, nor even agreed definitions of terms such as autonomous, it is widely understood that these are weapons systems that would select and engage targets with potentially lethal force without the need for meaningful human control.

The International Committee on the Red Cross (ICRC), a leading organisation working on the issue, describes killer robots as:

> *"any weapon systems with autonomy in its 'critical functions,' that is, a weapon system that can select (i.e. search for or detect, identify, track, select) and attack (i.e. use force against, neutralise, damage or destroy) targets without human* intervention."[1]

While many existing weapons systems have a degree of autonomy or automation, technological advances mean we are on the brink of a new generation of weapons systems capable of operating without meaningful human control. Many argue this will amount to a revolution in armed conflict with devastating ethical, technical and legal consequences, which have yet to be adequately identified and addressed.



The civil society fightback

In 2013, non-governmental organizations co-founded the Campaign to Stop Killer Robots[2] to work for a pre-emptive ban on the development, production, and use of fully autonomous weapons. It sees an urgent need for a new international treaty to retain meaningful human control over the use of force. UNA-UK has been an active member of the Campaign to Stop Killer Robots from the beginning. The Campaign's goal has been endorsed by Nobel Peace laureates, faith leaders, scientists and 26 states.

Signs of support for regulation have multiplied in recent months. In May 2018, the UN Secretary-General released an "Agenda for Disarmament", in which he pledges to "support the efforts of Member States to elaborate new measures, including though political or legally binding arrangements, to ensure that humans remain at all times in control over the use of force"[3]. In June 2018, Google released a set of ethical principles that include a pledge not to develop or design artificial intelligence for use in weapons. And in July 2018, over 200 technology companies and organisations from more than 36 countries, including UNA-UK, and 2,600 individuals including the founders of Google's Deepmind and Tesla, signed on to a pledge coordinated by the Future of Life Institute that commits them to "neither participate in nor support the development, manufacture, trade, or use of lethal autonomous weapons"[4]. The pledge continues to attract new signatories.

"In June 2018, Google released a set of ethical principles that include a pledge not to develop or design artificial intelligence for use in weapons."

Creeping autonomy

In the absence of international consensus on what constitutes an acceptable level of autonomy, states and the private sector have been pushing the boundaries and investing heavily in new technology.

A report published by the International Data Corporation suggests that worldwide spending on robotics and related services will more than double from $91.5 billion in 2016 to more than $188 billion in 2020.[5] The US Department of Defense requested an estimated $9.39 billion for unmanned systems and associated technologies in its 2019 budget, which represents "a significant expansion in drone spending" from the 2018 budget.[6] Meanwhile, the Chinese government issued a blueprint for building a $150 billion Artificial Intelligence (AI) industry by 2030.[7] Other states have also announced significant increases in civil and military spending on AI and autonomous systems.

In November 2017, the Stockholm International Peace Research Institute (SIPRI) released its first report surveying the development of autonomy in weapons systems, identifying at least 381 autonomous systems developed for defence purposes, including 175 in weapon systems, most remote-controlled drones. The report states that the UK is Europe's biggest investor in military research and development;[8] although figures are not published as to the current level of funding that the UK allocates specifically to military applications of AI and robotics technologies.

Earlier in 2018 at the international Eurosatory arms fair in Paris, defence contractors from around the world displayed an array of hi-tech weapons systems incorporating artificial intelligence and autonomous features, from remote-controlled tanks to miniature drones to loitering munitions.[9]

Existing examples of weapons systems with autonomous elements

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South Korean sentry guns

In 2006, it was reported Samsung Techwin and Korea University had designed a robot to assist the South Korean military along the Demilitarised Zone. Samsung previously listed on its website that "the system is designed to replace human-oriented guards."[10] The South Korean deputy minister described it as having "surveillance, tracking, firing and voice-recognition systems built into a single unit."[11]

Taranis Stealth Drone

The Taranis stealth drone was designed by BAE Systems for the UK Ministry of Defence (MoD) to "test the possibility of developing the first ever autonomous stealthy Unmanned Combat Air Vehicle (UCAV) that would ultimately be capable of precisely striking targets at long range, even in another continent."[12] Costing over $185 million when unveiled in 2010, the Taranis has now undergone several flight trials but is not currently deployed. The unmanned air system "is capable of understanding sustained surveillance, making targets, gathering intelligence, deterring adversaries and carrying out strikes in hostile territory" under the control of a human operator – for now.[13]

BAE Systems

Kalashnikov group

Russian Fully Automated Combat Module

The Kalashnikov group, Russia's main defence contractor, announced it had "developed a fully automated combat module based on neural network technologies that enable it to identify targets and make decisions."[14] The group announced that it will unveil a range of products using the combat module.

Storm Shadow/Scalp EG

Manufactured by MDBA Systems, the Storm Shadow missile "is equipped with fire-and-forget technology and fully autonomous guidance."[15] "Once launched, the missile cannot be controlled or commanded to self-destroy…the missile then tries to locate its target based upon its targeting information. If it can not, and there is a high risk of collateral damage, it will fly to a crash point instead of risking inaccuracy."[16]

David Monniaux (CC BY-SA 3.0)

Julian Herzog

IAI Harop

The manufacturer, Israel Aerospace Industries (IAI), state: "Combining capabilities of a UAV and a lethal missile, Harop searches, finds, identifies, attacks and destroys targets…Independent of real-time intelligence, Harop is uniquely capable against time-critical, high-value, relocatable targets". IAI's website further lists "autonomous platform operation" as one of the weapons selling points.[17]

The international framework and the case for a ban

International efforts to address the threats posed by specific weapons predate the First World War. This is particularly the case for classes of weapons whose effects are deemed to be so inhumane that their use is considered to be a war crime. From mustard gas to cluster munitions, the international community has held time and again that it is not enough to retroactively prosecute individuals for the use of such weapons. Rather, these weapons must be banned to proactively protect the world.

Specific prohibitions are often based on the inability of weapons systems to comply with the principles of military necessity, proportionality and distinction – principles outlined in the Geneva Conventions. Applying these principles requires qualitative and quantitative assessments of the possible impact of the action in the ever-changing context of a conflict. The distinction between a legitimate and an illegitimate target is often one of behaviour. (Has a combatant surrendered? Do the actions of an individual identify them as a civilian or an irregular combatant?) Also, decisions around legitimate proportionality require the question of what would be considered "excessive civilian losses" to be weighed against what would be considered a "concrete and direct military advantage."[18]

Such decisions are not always straightforward. Those making them need to be able to evaluate the likely consequences of their action, which requires a complex set of judgements that are operational, but also legal and moral. The extent to which a machine could perform such judgements is unclear, and there is a strong risk that the technology that enables an autonomous weapon to kill will develop more rapidly than any potential technology that enables it to decide whether it should. It is therefore possible that autonomous weapons could more "trigger happy" than humans, and make war crimes, such as targeting civilians, more likely.

It would also be unclear in such cases, who can and should be held to account. For example, if responsibility were to be contested between the robot itself, those that deployed it, those that programmed it, and those who provided it with its information and operational parameters then there is a chance that all may escape justice, creating a climate of impunity. It could also make war more brutal, as humans may task robots with actions they would hesitate to perform themselves.

Anti-personnel mines and booby traps are already regulated through binding international treaties due to their indiscriminate effects caused in part by a lack of human oversight. International bans on chemical and biological weapons were also motivated largely because of their uncontrollable nature – once released,

"If responsibility were to be contested between the robot itself, those that deployed it, those that programmed it, and those who provided it with its information and operational parameters then there is a chance that all may escape justice, creating a climate of impunity"

the spread of a chemical or biological agent cannot be controlled. The 1995 Protocol IV (on Blinding Laser Weapons) to the Convention on Certain Conventional Weapons demonstrates that prohibitions can be effective with prevention in mind, in advance of a technology being fully developed. While such international bans have not entirely stopped the use of these weapons, they have dramatically reduced their use through stigma and through the anticipation of a robust response from the international community should these norms be flouted.

Given the apparent inability for killer robots to comply with existing principles of international law, the successful precedent for developing specific prohibitions on those classes of weapons that pose the greatest threats or are the most abhorrent, and the need for clarity on an issue of significant complexity, there is a clear case for a pre-emptive ban on killer robots.

The role of the UN

While the issue has been raised at several UN bodies, including the General Assembly and Human Rights Council, the Convention on Certain Conventional Weapons (CCW) has become the main international body examining the issue.

A total of 125 nations are bound by the CCW, which entered into force in 1983 and contains five protocols to ban or restrict specific types of weapons that "cause unnecessary or unjustifiable suffering to combatants or to affect civilians indiscriminately."[19]

In 2016, the CCW established a Group of Governmental Experts (GGE) to begin discussions in November 2017. Three informal meetings took place before that. More than 80 states have regularly participated in CCW meetings on killer robots since 2014.

Where are we up to?

Since 2014, the CCW meetings have made progress determining the various technical, operational, ethical, legal and accountability concerns raised by killer robots, with support from the academic and NGO community.

The CCW works on the basis of consensus so any legal or other measures to emerge will need to command the support of all participating states. In November 2018, states will decide how to proceed. At the most recent GGE meeting in August 2018, a majority of states called for the CCW to start negotiating new international law – a path that could lead to a new ban treaty to retain meaningful human control over weapons systems. Yet those proposals were rejected by a handful states with advanced military hardware. As a result, the meeting could only recommend that the CCW continue 'exploring options for an outcome' next year.[20]

Efforts to create new international law have been most vehemently opposed by Australia, Israel, Russia, South Korea and the US. During the August meeting, the UK said it "supports the [CCW] mandate as it is and is not prepared to move to a negotiating mandate"[21] – a position in line with previous policy expressions. China has split the consensus of the permanent five members of the UN Security Council after expressing support for moving to negotiate a ban on killer robots.[22]

Meanwhile, in September 2018 the European Parliament passed a resolution by an overwhelming majority urging EU member states to work towards "international negotiations on a legally binding instrument prohibiting lethal autonomous weapon systems."[23] While non-binding, the calls for a united EU position on a ban will add to the growing pressure on states like the UK to support a prohibition.

"Efforts to create new international law on killer robots have been most vehemently opposed by Australia, Israel, Russia, South Korea and the US"

Below: The Palais des Nations, Geneva - where the High Contracting Parties of the Convention on Certain Conventional Weapons (CCW) meet to discuss lethal autonomous weapons systems. © UN Photo

The UK and killer robots

The UK's position is that Britain "does not possess fully autonomous weapon systems and has no intention of developing them" and that "existing International Humanitarian Law is sufficient to control and regulate killer robots."[24]

In response to a letter from UNA-UK and others, in May 2018 the UK reasserted its commitment to human oversight but stopped short of committing to work for a new prohibition on killer robots.[25]

A futuristic definition

In 2017 the UK defined autonomous weapons systems as those "capable of understanding higher-level intent" in a new Joint Doctrine Publication (JDP) on the use of unmanned aircraft systems.[26]

This definition is ambiguous and sets a concerningly high threshold for an autonomous weapon system, effectively giving the green light for a highly controversial degree of autonomy before the definition is triggered.

UK "out of step" with international community

In November 2017, a UK Government minister stated: "The task in hand is absolutely to get an internationally agreed definition, and we believe that the UN CCW is the right forum in which to do so." On 16 April 2018, a Parliamentary Select Committee determined that the UK's definition is "clearly out of step with the definitions used by most other governments."[27] The Committee further noted that the definition inhibits the UK from playing an "active role as a moral and ethical leader on the global stage" and "fundamentally hamstrings attempts to arrive at an internationally agreed definition."[28] The Committee gave the Government until December 2018 to come up with a revised wording in line with that of other states.

Mixed messages

The UK failed to accept this recommendation, instead responding in June 2018 that the UK has "no plans to change the definition of an autonomous system".[29] This response, considered alongside the ministerial statement in favour of reaching a shared international definition, makes the UK's position appear incoherent at best, and at worst, capable of obstructing international efforts to develop a shared definition of killer robots.

However, in the most recent GGE meeting, the UK circulated a working paper which usefully shaped discussions and showed a willingness to work productively with the international community on the issue.[30] The paper, which aimed to "seek agreement" on the elements of human control required in weapons systems, could indicate a positive softening of the UK's opposition to international action on killer robots.

UNA-UK believes UK leadership to prohibit killer robots is vital, and could reinforce the Prime Minister's ambition for a Global Britain at the forefront of the international movement for ethical AI, as declared in her January 2018 Davos address.[31]

Campaign with UNA-UK

As a member of the Campaign to Stop Killer Robots, UNA-UK is calling on the UK Government to play a constructive role in international meetings on killer robots and support the growing calls to start negotiating a new framework to prohibit the development of killer robots. Such an approach would be the most effective way to ensure that weapons systems across the globe to remain under meaningful human control.

The next CCW meeting provides the UK with a key opportunity to clarify its position and begin participating constructively in efforts to build international consensus on a new framework to prohibit killer robots.

Take action

We are asking all our members, supporters and local UNAs to contact their MPs to and urge them to call on the UK to cooperate with the international community and join the growing number of states supporting a ban on killer robots.

We stand on the verge of a stark dehumanisation of warfare. Join UNA-UK in campaigning on this issue before it is too late.

To take action, please visit:

www.una.org.uk/killer-robots

UNA-UK

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