

# The United Kingdom and lethal autonomous weapons systems

## Analysis of UK Government policy statements on lethal autonomous weapons systems.

Article 36 is a UK-based not-for-profit organisation working to promote public scrutiny over the development and use of weapons.

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## Introduction

The defining feature of lethal autonomous weapons systems is that they would be systems that operate without meaningful human control. This concept of meaningful human control has been a central focus of international deliberations on autonomous weapons systems, and one that has received increasing support from states, the ICRC and UN. There have been various formulations to describe the basic concept of human control, including “appropriate levels of human judgement,” and “effective human control”, but all refer to the same underlying principle. At the most basic level, the requirement for meaningful human control develops from two premises:

- 1) that a machine applying force and operating without any human control whatsoever is broadly considered unacceptable, and
- 2) that a human simply pressing a ‘fire’ button in response to indications from a computer, without cognitive clarity or awareness, is not sufficient to be considered ‘human control’ in a substantive sense.<sup>1</sup>

The United Kingdom (UK) has asserted that its weapons systems will always be under human control, indicating some commitment to this basic principle. Building on this, the UK has subsequently said that it will not develop lethal autonomous weapons systems (LAWS). However, 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. By adopting a higher-level and futuristic concept of LAWS, the UK is failing to address contemporary developments in autonomous weapons systems which pose an immediate and serious threat. Furthermore, the Ministry of Defence and BAE Systems are investing in the development of its own autonomous system, the Taranis, which has been testing autonomous capabilities including target location and engagement<sup>2</sup> and raises concerns over the UK’s assurances that it does not and will not develop LAWS.

The UK is also arguing that new international law is not necessary in order to prevent the development of lethal autonomous weapons systems. No substantive rationale has been offered for this assertion, although politically it is consistent with previous UK positions at the early stages of other international weapons regulation processes, including on incendiary weapons, anti-personnel landmines and cluster munitions. Whilst the subject of LAWS is the focus of international discussion at the UN Convention on Conventional Weapons (CCW), a forum in Geneva designed to restrict and ban particular weapons, the UK appears to be the only state to have explicitly ruled out the development of new international law.

Instead, the UK has sought to argue that legal reviews of weapons under article 36 of the 1977 additional protocol I of the Geneva Conventions will be a sufficient response for the international community. This assertion is undermined by the lack of international standards for, and limited implementation of, such legal reviews. It is also challenged by an understanding of the way in which the operation of autonomous weapons would modify and expand the concept of an individual attack.<sup>3</sup> This makes it very difficult to see how existing assessments of permissibility under International Humanitarian Law (IHL) could be applied in the context of weapon reviews conducted

for autonomous weapons. Clearer rules are therefore needed to address the particular challenges presented by the development of increasingly autonomous weapons systems.

LAWS pose a series of ethical, human rights and humanitarian law challenges. With around a dozen states researching and developing autonomous weapons systems, there is an urgent need to tackle these systems before they are put into operation. In this context, current UK policy lacks the level of coherence that would be required for it to be assessed as adequate and appropriate in the UK national context, or as a contribution to the international discussions on this urgent and fundamental question for humanity. This paper provides an analysis of UK statements on the topic of lethal autonomous weapons systems as well as a set of recommendations to the UK government.

## Overview of the UK's policy on autonomous weapons systems

### On lethal autonomous weapons systems

The UK has sought to define autonomous weapons systems as higher-level and futuristic weapon systems that are self-aware, and significantly more sophisticated than what many roboticists and other experts have referred to as a lethal autonomous weapon systems or fully autonomous weapons systems, or, in more colloquial terms, 'killer robots'. Therefore, when the UK is saying that it has no intention of developing these systems, it appears to be in reference only to these more sophisticated weapon systems that are currently not yet technologically achievable, and not those systems that are the subject of international discussions at the CCW on the cusp of development and therefore requiring urgent attention.

The UK's proposed definition as laid out in the Ministry of Defence (MOD)'s Joint Doctrine Note (2011)<sup>4</sup>, blurs the lines between automated systems and other weapons systems that incorporate autonomy into their critical functions, but may not involve the same levels of artificial intelligence envisaged in the UK's suggested conception of autonomous weapons systems. This has the effect of leaving open the possibility of developing autonomous weapons systems that would lack the necessary human control to be permissible from the point of view of international law and wider social and ethical considerations.

### UK definition of autonomous weapons systems, UK Ministry of Defence (MOD) Joint doctrine note (2011)<sup>5</sup>

"An autonomous system is capable of understanding higher level intent and direction. From this understanding and its perception of its environment, such a system is able to take appropriate action to bring about a desired state. It is capable of deciding a course of action, from a number of alternatives, without depending on human oversight and control, although these may still be present. Although the overall activity of an autonomous unmanned aircraft will be predictable, individual actions may not be."

### On the development of lethal autonomous weapons systems

The UK has asserted that it will not develop lethal autonomous weapons systems. In its statements to the CCW, the UK has stated that the UK's policy on LAWS is that "such systems do not – and may never, exist. The UK does not plan to develop LAWS and remains committed to maintaining human oversight and control over the use of force."<sup>6</sup> The MOD's joint doctrine note, however, does not necessarily use the same terminology for these weapons systems as roboticists and other experts involved in international deliberations on this theme when referring to LAWS.

The doctrine note also appears to provide scope for the development of such systems in the future should such weapons be deemed capable of use in compliance with IHL. In this regard, the UK's Ministry of Defence and BAE Systems are developing the Taranis, an aircraft which can take off and land autonomously, and according to reports has been tested also to autonomously locate and engage targets.<sup>7</sup>

The UK has not published analysis nor explained how assessments would be made in the face of the various highly complex implications of artificial intelligence and autonomy in weapons systems, over which systems it considers acceptable, and which are unacceptable, nor the rationale for any such assertions. A clearer national policy is therefore needed.

### On keeping weapons systems under human control

In Parliament, the government committed that the "operation of weapons systems will always remain under human control".<sup>8</sup> Subsequently, the government elaborated further to say that "meaningful human control is an emergent concept which the UK is mindful of and working to define with interested parties in step with technological and doctrinal developments ... in UK operations every target is assessed by a human, and every release of weapons is authorised by a human; other than in a very small number of instances, all targets are also acquired by a human. The exception is in a small number of defensive anti-materiel systems e.g. Phalanx. However, in those instances a human is required to authorise weapons release."<sup>9</sup>

Beyond targeting procedures, the UK should explain the basic elements that allow human control to be applied in the operation of existing weapons systems, such as information on the context of the attack and the functioning of the weapon system, as well as controls on the space and time within which an attack will occur.

The government should also explain the exceptions to such controls and why they are permissible, such as in relation to Phalanx anti-ship missiles (an automated weapon system) and should provide clarifications on its statement on 'weapons release.' In terms of existing policy it should clarify whether, once a human has authorised the release of a weapon, the weapons system itself might:

- a) have the capacity to select a specific object to be struck from within a target area established by a human operator;
- b) have the capacity to determine for itself what target (military objective) it will strike; or
- c) whether it, might permissibly have even more scope for action than this.

In the context of future weapon systems that may have greater autonomy, it would be useful to know what level of subsequent ‘decision making’ might still be made by computers. For example, if a human commander has set a group of military vehicles as a ‘military objective’ for attack, is it permissible for the weapon system to identify and direct its warheads at specific vehicles, in order to maximise the efficiency of the weapons operation?

Given its position that the operation of weapons systems will always remain under human control, the UK should support the principle of ‘meaningful human control over individual attacks’. As a baseline position, this appears to be in line with UK policy, whilst recognising that human control must be ‘meaningful’ – i.e. it must be more than a person pressing a button when instructed to do so by a computer.

### On new international law

Whilst international governmental discussions have begun but not yet established a direction of work within the CCW forum – a forum aimed at banning and restricting weapons, the UK has presently ruled out developing new international law to prohibit lethal autonomous weapons systems.<sup>10</sup> Given calls from senior UN officials that “autonomous weapons systems that require no meaningful human control should be prohibited”<sup>11</sup>, as well as calls from civil society<sup>12</sup> and leading Artificial Intelligence experts<sup>13</sup> that lethal autonomous weapons systems should be subject to an international prohibition, this position seems to be premature and one that will need to change in the near future.

The UK has stated that IHL is adequate in dealing with the use of weapons systems during armed conflict.<sup>14</sup> Clearer rules that reflect the technological developments since international humanitarian law was developed would be the best way to ensure that these weapons are not developed or used, as well as to make sure they are not used either in a domestic law enforcement setting or during armed conflict. The development of autonomy in the critical functions of weapons systems provides a novel challenge to the application of international humanitarian law, under which humans are the agents that a party to conflict instructs to engage in hostilities. In order to uphold existing IHL, international rules will need to be developed to address the potential implications of the development of autonomy in weapons systems. Simply to argue that IHL is adequate, without taking into account this unprecedented challenge, constitutes a dangerous disregard to the structure and operation of the law as it stands.

### UK statement to the Guardian newspaper in April 2015:

“At present, we do not see the need for a prohibition on the use of LAWS, as international humanitarian law already provides sufficient regulation for this area. The United Kingdom is not developing lethal autonomous weapons systems, and the operation of weapons systems by the UK armed forces will always be under human oversight and control. As an indication of our commitment to this, we are focusing development efforts on remotely piloted systems rather than highly automated systems.”<sup>15</sup>

### On weapons review processes

The UK has also stated that a process of legal weapons review process is a sufficient framework for the assessment and regulation of LAWS.

In actual terms few states carry out weapons reviews, and such processes are neither transparent, nor likely to be sufficiently grounded in humanitarian, human rights or wider ethical concerns. It is not clear whether such processes have prevented the development of other weapons, or indeed whether weapons reviews may have explicitly permitted the development of weapons systems that have subsequently been banned. In any case, it seems difficult to argue that the CCW should forego the development of new international rules and rely simply on national level weapon reviews when the CCW itself was developed in part as a response to the perceived inadequacy of national level weapon reviews for dealing with precisely these kinds of concerns about specific weapons systems.

## Conclusion and recommendations to the UK government

The UK’s futuristic definition of lethal autonomous weapons systems is out of step with current understanding of these weapon systems. Applying a focus to systems that are not yet technologically achievable neglects discussion over the systems that are currently on the cusp of development, including the Taranis, that require urgent attention.

The UK should engage in debate on this issue nationally and internationally, with the aim of setting a global standard that prevents the development and use of lethal autonomous weapons systems.

Article 36 recommends that the UK government should:

- × Set out the UK’s policy for ensuring weapons systems will always remain under human control, with reference to how this works for existing weapons systems and the assessments for how it will work for emerging systems.
- × Set out the UK’s assessment of the implications of autonomous weapons for the concepts of ‘human control’ and ‘individual attack’ and support the policy position that there should always be meaningful human control over every individual attack.
- × Develop a comprehensive national policy that clarifies its previous statements and doctrine notes which further elaborates its position.
- × At the UN’s Convention on Conventional Weapons (CCW) Review Conference in December 2016, support negotiations towards new international law to prohibit lethal autonomous weapons systems

## END NOTES

- 1 For a discussion of the challenges LAWS pose to the maintenance of control over individual attacks as conceived in IHL, and some key elements that may be considered in approaching meaningful human control, see Article 36 (April 2016) 'Key elements of meaningful human control' and Roff, Heather M. and Moyes, Richard. 'Meaningful Human Control, Artificial Intelligence and Autonomous Weapons.' Briefing paper prepared for the Informal Meeting of Experts on Lethal Autonomous Weapons Systems, UN Convention on Certain Conventional Weapons, April 2016, both available at [www.article36.org](http://www.article36.org)
- 2 "Anglo-French UCAV Study Begins To Take Shape", Aviation Week, 4 February 2016, <http://aiaaionweek.com/defense/anglo-french-ucav-study-begins-to-take-shape>
- 3 For a discussion of article 36 reviews and their limitations with respect to addressing the concerns raised by LAWS, see Article 36 (April 2016) 'Article 36 reviews and addressing Lethal Autonomous Weapons Systems', available at [www.article36.org](http://www.article36.org)
- 4 Ministry of Defence (2011), 'Joint Doctrine Note 2/11: The UK Approach to Unmanned Aircraft Systems' available at: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/33711/20110505JDN\\_211\\_UAS\\_v2U.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/33711/20110505JDN_211_UAS_v2U.pdf)
- 5 Ministry of Defence (2011), 'Joint Doctrine Note 2/11: The UK Approach to Unmanned Aircraft Systems' available at: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/33711/20110505JDN\\_211\\_UAS\\_v2U.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/33711/20110505JDN_211_UAS_v2U.pdf)
- 6 Statement of the UK to the CCW Meeting of High Contracting Parties, November 2015, available at: [http://www.unog.ch/80256EDD006B8954/\(httpAssets\)/880AB56F1A934474C1257F170056A8F2/\\$file/2015\\_CCWMSP\\_LAWS\\_UnitedKingdom.pdf](http://www.unog.ch/80256EDD006B8954/(httpAssets)/880AB56F1A934474C1257F170056A8F2/$file/2015_CCWMSP_LAWS_UnitedKingdom.pdf)
- 7 'Anglo-French UCAV Study Begins To Take Shape', Aviation Week, 4 February 2016, <http://aiaaionweek.com/defense/anglo-french-ucav-study-begins-to-take-shape>
- 8 Lord Astor of Hever (Parliamentary Under Secretary of State, Defence; Conservative), House of Lords debate, 26 March 2013, available at: [http://www.publications.parliament.uk/pa/ld201213/ldhansrd/text/130326-0001.htm#st\\_14](http://www.publications.parliament.uk/pa/ld201213/ldhansrd/text/130326-0001.htm#st_14)
- 9 House of Lords November 2014 written questions, Unmanned Air Vehicles:Written question - HL2710, asked by Lord West of Spithead, available at: <http://www.parliament.uk/business/publications/written-questions-answers-statements/written-question/Lords/2014-11-06/HL2710>
- 10 Owen Bowcott, 'UK opposes international ban on developing "killer robots"', The Guardian, 13 April 2015, available at: <http://www.theguardian.com/politics/2015/apr/13/uk-opposes-international-ban-on-developing-killer-robots>
- 11 UN Human Rights Council, 'Joint report of the Special Rapporteur on the rights of freedom of peaceful assembly and of association, and the Special Rapporteur on extrajudicial, summary or arbitrary executions on the proper management of assemblies', 4 February 2016, A/HRC/31/66
- 12 Campaign to Stop Killer Robots, 'Call to Action', available at: <http://www.stopkillerrobots.org/call-to-action/>
- 13 See Future of Life Institute (2015), 'Autonomous Weapons: An Open Letter From AI & Robotics Researchers', available at: <http://futureoflife.org/open-letter-autonomous-weapons/>
- 14 Statement of the UK to the CCW Meeting of High Contracting Parties, November 2015, available at: [http://www.unog.ch/80256EDD006B8954/\(httpAssets\)/880AB56F1A934474C1257F170056A8F2/\\$file/2015\\_CCWMSP\\_LAWS\\_UnitedKingdom.pdf](http://www.unog.ch/80256EDD006B8954/(httpAssets)/880AB56F1A934474C1257F170056A8F2/$file/2015_CCWMSP_LAWS_UnitedKingdom.pdf) The UK stated: "Given the uncertainties in the current debate, the UK is not convinced of the value of creating additional guidelines or legislation. Instead, the UK continues to believe that international humanitarian law remains the appropriate legal basis and framework for the assessment of the use of all weapons systems in armed conflict".
- 15 Above note 10
- 16 For a discussion of article 36 reviews and their limitations with respect to addressing the concerns raised by LAWS, see Article 36 (April 2016) 'Article 36 reviews and addressing Lethal Autonomous Weapons Systems', available at [www.article36.org](http://www.article36.org)