ICRC

AUTONOMOUS WEAPON SYSTEMS - Q & A

A challenge to human control over the use of force.

Technological advances in weaponry mean that decisions about the use of force on the battlefield could increasingly be taken by machines operating without human intervention. Here, we examine the potential implications of such a profound change in the way war is waged, and caution against the use of such weapons unless respect for international humanitarian law can be guaranteed.

How could autonomous weapon systems, operating independently, distinguish between a combatant and a civilian? Would they be capable of cancelling an attack that risks disproportionate effects on civilians? And who would be held responsible and accountable for a violation of international humanitarian law?

Owing to the many unresolved questions, the ICRC has called on States to properly assess the potential human cost and international humanitarian law implications of these new technologies of warfare. And in March 2014 the ICRC convened an international expert meeting to facilitate discussion of these issues. (Read the Expert meeting report)

What are autonomous weapons?

Autonomous weapon systems (also known as lethal autonomous weapons or "killer robots") independently search for, identify and attack targets without human intervention. There are already some weapon systems in use today that have autonomy in their 'critical functions' of identifying and attacking targets. For example, some defensive weapon systems have autonomous modes to intercept incoming missiles, rockets, artillery shells, or aircraft at close range. So far these weapons tend to be fixed in place and operate autonomously for short time-periods, in narrow circumstances (e.g. where there are relatively few civilians or civilian objects), and against limited types of targets (i.e. primarily munitions or vehicles). However, in the future autonomous weapon systems could operate outside tightly constrained spatial and temporal limits, encountering a variety of rapidly changing circumstances and possibly targeting humans directly.

Is a drone a type of autonomous weapon?

Autonomous weapon systems fire without human intervention, in contrast to the unmanned air systems (also known as drones or remotely piloted aircraft) in use today. Drones may have other autonomous features (such as auto-pilot and navigation) but they require human operators to select targets and activate, direct and fire their weapons.

There have been calls for a moratorium or a ban on the development, production and use of autonomous weapon systems. Does the ICRC support these calls?

The ICRC has not joined these calls for now. However, the ICRC is urging States to consider the fundamental legal and ethical issues related to the use of autonomous weapon systems before they are further developed or deployed in armed conflict, as required by international humanitarian law. The ICRC is concerned over the potential human cost of autonomous weapon systems and whether they are capable of being used in accordance with international humanitarian law.

What does international humanitarian law say about autonomous weapons?

There is no specific rule for autonomous weapon systems. However, the law says that States must determine whether the use of any new weapon or means or method of warfare that it develops or acquires would be prohibited by international law in some or all circumstances, as required by Additional Protocol I to the Geneva Conventions.

In other words, the longstanding rules of international humanitarian law governing the conduct of hostilities, in particular the rules of

distinction, proportionality and precautions in attack, apply to all new weapons and technological developments in warfare, including autonomous weapon systems. Carrying out such legal reviews is of crucial importance in light of the development of new weapons technologies.

The central challenge for any State developing or acquiring an autonomous weapon system is to ensure it is capable of operating in compliance with all these rules. For example, it is not clear how such weapons could discriminate between a civilian and a combatant, as required by the rule of distinction. Indeed, such a weapon might also have to distinguish between active combatants and those hors de combat or surrendering, and between civilians taking a direct part in hostilities and armed civilians, such as law enforcement personnel or hunters, who remain protected against direct attack.

An autonomous weapon system will also have to operate in compliance with the rule of proportionality, which requires that the incidental civilian casualties expected from an attack on a military target not be excessive when weighed against the anticipated concrete and direct military advantage. Finally, an autonomous weapon system will have to operate in a way that enables application of the required precautions in attack designed to minimize civilian casualties.

Assessments of current and foreseeable technology indicate it is unlikely that these decision-making capabilities could be programmed into a machine. Therefore, today there are serious doubts about the ability of autonomous weapon systems to comply with international humanitarian law in all but the narrowest of scenarios and the simplest of environments.

What might be the implications of using autonomous weapon systems in armed conflict?

Some proponents of autonomous weapon systems argue that they could be programmed to operate more 'cautiously' and accurately than human beings, and therefore be used to limit unintended civilian casualties. On the other hand, critics counter that autonomous weapon systems will always lack the human judgement necessary for lawful use of force, and that their use is more likely to result in much greater human cost.

These weapon systems also raise serious ethical questions, and their widespread deployment would represent a paradigm shift in the conduct of hostilities. The fundamental question for all of us is whether the principles of humanity and the dictates of public conscience can allow machines to make life-and-death decisions.

Who is responsible if the use of an autonomous weapon system results in a violation of international humanitarian law?

As a machine, an autonomous weapon system could not be held responsible for a violation of international humanitarian law. This raises the question, beyond the responsibility of those deploying these systems, of who would be legally responsible if the operation of an autonomous weapon system results in a war crime: the engineer, the programmer, the manufacturer or the commander who activates the weapon? If responsibility cannot be determined as required by international humanitarian law, is it legal or ethical to deploy such systems?

What should be the focus of future discussions among States?

With increasing autonomy there is a risk of substituting human decision-making with that of machines, and thereby eroding human control over the use of force. While there is recognition that humans must retain ultimate control, more detailed deliberation is needed about what constitutes adequate, meaningful, or appropriate human control over the use of force.

The ICRC has recommended that States examine autonomy in the 'critical functions' of existing and emerging weapon systems, and share this information, to gain a better understanding. Future discussions must address a key question: at what point, and in which circumstances, do we risk losing meaningful human control over the use of force?

As many questions remain unanswered, the ICRC is calling on States to ensure that autonomous weapon systems are not employed if compliance with international humanitarian law cannot be guaranteed.

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自主武器系统问答

人类控制武力使用所面临的挑战

武器技术的进步意味着战场上有关武力使用的决定可能越来越无需人为干预、完全由机器做出。在本文中，我们探讨了这类作战方法的深刻变革可能造成的影响，并告诫各方在无法确保国际人道法得到遵守的情况下尽量不要使用这种武器。

自主武器在独立运行的情况下如何区分战斗员和平民？它们能够撤销可能会对平民造成不成比例影响的攻击吗？如果它们违反国际人道法，应该由谁来负责？

由于还存在许多悬而未决的问题，红十字国际委员会呼吁各国恰当地评估这类新作战技术可能带来的人员伤亡及其对国际人道法的影响。2014年3月，红十字国际委员会举办了国际专家会议来推动对这类问题的讨论。(参阅专家会议报告)

什么是自主武器?

自主武器（也被称为致命自主武器或“杀人机器人”）能够在无人干预的情况下独立搜索、识别并攻击目标。目前已经在使用的某些武器系统在识别和攻击目标等“重要功能”方面具有自主性。例如，某些防御武器系统具有自主模式，能够拦截来袭的导弹、火箭弹和炮弹或附近的飞机。迄今为止，这些武器一般都是固定在一处，在短期内在有限的情况下（例如在平民或民用物体相对较少时）自主运转，而且攻击目标的类型也有限（例如主要针对弹药或车辆）。然而，未来的自主武器将不受空间和时间的严格限制，应对一系列迅速变化的情况，而且可能直接攻击人类。

无人机是一种自主武器吗?

自主武器系统在无人干预的情况下发射武器，与目前使用的无人驾驶飞机（也称为无人机或遥控驾驶飞机）不同。无人机可能具有其他自主特性（例如自动驾驶和导航），但它们仍然需要人工操作来选择目标，并对所携带武器进行激活、设定方向和发射。

目前已经有不少声音呼吁暂停或禁止自主武器的研发、生产和使用。红十字国际委员会是否支持这类呼吁?

红十字国际委员会目前暂时没有参与这些呼吁。然而，红十字国际委员会敦促各国在进一步研发自主武器或在武装冲突中部署这类武器之前，根据国际人道法规定，认真考虑自主武器系统的使用所涉及的基本法律和伦理问题。红十字国际委员会担心自主武器系统造成的潜在人员伤亡以及它们的使用是否能够符合国际人道法。

国际人道法对自主武器有何规定?

目前还没有针对自主武器的具体规定。然而，国际人道法规定，各国必须确定使用其研发或获取的某种新武器、新作战手段或方法是否在某些情况下或在任何情况下都受

到国际法的禁止，正如日内瓦公约第一附加议定书所规定的那样。

换言之，国际人道法由来已久的规则，特别是实施攻击时的区分、比例和预防原则，都适用于所有新武器和新作战技术，包括自主武器。鉴于新武器技术的发展，实施此类法律审查至关重要。

研发或获取自主武器系统的国家面临的主要挑战是确保自主武器的使用能够符合所有规则。例如，目前还不清楚这些武器如何能够根据区分原则来将平民和战斗员区分开来。事实上，这类武器还应该可以区分以下人员：现役战斗员和失去战斗力或投降的战斗员，直接参与敌对行动的平民和执法人员或猎人等有武装的平民，后者仍应享有免受直接攻击的保护。

自主武器系统也必须遵守比例原则，该原则要求攻击军事目标造成的平民附带伤亡与预期的具体直接军事利益相比不能过大。最后，自主武器系统在运转时必须能适用在攻击中尽量减少平民伤亡的预防原则。

对当前与近期科技的评估显示，不可能通过编程赋予机器这些决策能力。因此，如今对于自主武器系统在所有纷繁复杂的情形和环境中遵守国际人道法的能力存在严重质疑。

在武装冲突中使用自主武器系统可能产生什么影响？

自主武器系统的某些支持者认为，通过编程可以使它们运转得比人类更加“审慎”和精准，从而用于避免意外的平民伤亡。另一方面，反对者认为自主武器系统将始终缺乏确保合法使用武力所需的人类判断力，而且其使用更可能会导致大得多的人员伤亡。

这类武器系统还引发了严重的伦理道德问题，它们的普遍部署会带来敌对行为模式的根本改变。对我们所有人而言，根本问题在于人道原则和公众良心是否会允许机器做出生死攸关的决定。

如果自主武器系统的使用导致了违反国际人道法的行为，应由谁来负责？

作为机器，自主武器系统不能为违反国际人道法的行为负责。这就提出了一个问题，除了部署这类系统之人应负的责任外，如果自主武器系统的使用导致战争罪，应该由谁来负法律责任：工程师、程序员、制造商或启动武器的指挥官？如果无法根据国际人道法的要求来确定责任方，那么部署这种系统是否合乎法律或道德？

各国未来讨论的重点应该是什么？

随着武器自主性日益增强，存在这样的风险：机器代替人类做出决策，从而削弱人类对武力使用的控制。大家承认人类必须保持最终的控制权，同时需要更仔细详尽地思考什么是对武力使用足够、有意义或合适的人类控制。

红十字国际委员会建议各国检查现有和将出现的武器系统在“重要功能”方面的自主性，并分享相关信息，以获得更好的理解。未来的讨论必须应对一个关键问题：在何时和何种情况下，我们会冒着失去人类对武力使用的有意义控制的风险？

由于有太多问题仍然没有答案，红十字国际委员会呼吁各国，在无法确保国际人道法得到遵守的情况下，尽量不要使用自主武器系统。