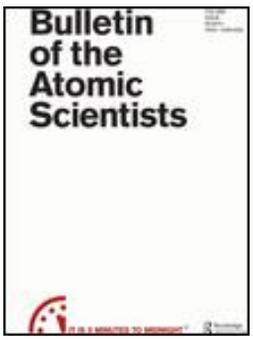

Bulletin of the Atomic Scientists

ISSN: 0096-3402 (Print) 1938-3282 (Online) Journal homepage: http://www.tandfonline.com/loi/rbul20

To ban or regulate autonomous weapons

Heather Roff

To cite this article: Heather Roff (2016) To ban or regulate autonomous weapons, Bulletin of the Atomic Scientists, 72:2, 122-124, DOI: 10.1080/00963402.2016.1145920

To link to this article: https://doi.org/10.1080/00963402.2016.1145920

BULLETIN OF THE ATOMIC SCIENTISTS, 2016
VOL. 72, NO. 2, 122–124
http://dx.doi.org/10.1080/00963402.2016.1145920

Routledge
Taylor & Francis Group

GLOBAL FORUM

To ban or to regulate autonomous weapons
A US response

Heather Roff

KEYWORDS Artificial intelligence; autonomous weapons; civilians; civilian safety; combatants; dual-use technologies; European Convention on Human Rights; Gorgon Stare; international humanitarian law; international human rights law

Hunting in packs. Patrolling computer networks. Deployed on land, at sea, in the air, in space – everywhere. Deployed autonomous weapons certainly *sound* sinister. But on balance, would they promote or detract from civilian safety?

Answering this question requires a clear understanding of the term "civilian safety." If it means protecting civilian lives during armed conflict, then yes, autonomous weapons might well contribute to this end someday. Today's technology, however, is not robust enough for autonomous weapons to distinguish combatants from noncombatants, particularly amid insurgencies or civil wars. The best that current technology can achieve is to recognize radar signatures, heat signatures, shapes – or, in the case of people, sensors on uniforms. But this only helps identify one's own fighters, which in no way increases civilian security.

It's easy to assume that autonomous weapons will, as their technological capacity improves, someday surpass human beings in their decision-making capacity on the battlefield. Humans, after all, get tired. They are easily misguided, or ideologically bent, or lack good judgment. Technologically sophisticated weapons, so the thinking runs, will not suffer from any of these failings. But such assumptions have no grounds in reality and would be a poor basis on which to make decisions about the future of autonomous weapons.

Autonomous weapons would not be "smarter smart bombs." Precision munitions (smart bombs) may be precise in their ability to locate a particular location in time and space – but that location is set by a human. Autonomous weapons, on the other hand, would choose their own targets. They might launch a "smart bomb" or a "dumb bomb" toward the target, but precision isn't the issue. The very *choice* of target is the issue.

To be sure, autonomous weapons technology may over time – with advancements in facial recognition, gesture recognition, biometrics, and so forth – become better able to identify permissible targets. Such advancements, nevertheless, would not guarantee that civilians would not be targeted. Nor would they preclude the emergence of *other* threats to civilian safety. For instance, in order to counter potential threats, autonomous weapons may someday perform persistent surveillance of populations, somewhat akin to the "Gorgon Stare" airborne surveillance system currently utilized by the United States (Nakashima and Whitlock 2011). If similar technology is employed on autonomous weapons, societies will face a host of problems not directly related to armed conflict but nonetheless related to civilian safety.

A very high bar

"Civilian safety" extends, then, beyond the conduct of hostilities – beyond the scope of international humanitarian law (International Committee of the Red Cross 2004). That is, civilian safety is both a wartime and a peacetime concern. In peacetime, another type of law applies – international human rights law, which is a broader set of treaties, principles, laws, and national obligations regarding "civil, political, economic, social, and cultural rights that all human beings should enjoy" (United Nations Human Rights, Office of the High Commissioner 2016).

If autonomous weapons are to comport with international human rights law, the weapons must *at least* comply with all international, regional, and bilateral human rights treaties, as well as with corresponding domestic legislation. Indeed, it might be necessary for autonomous weapons to *promote* human rights. So it's not enough for a nation to ask whether autonomous weapons will protect civilians in some other country where it is engaged in military operations; autonomous weapons must also abide by the laws of one's *own* country. More subtly, autonomous weapons must also

CONTACT Heather Roff HRoff@asu.edu

pass legal muster in circumstances that sit uncomfortably between the laws of war and the laws of peace.

All this constitutes a very high bar for autonomous weapons. To see this clearly, examine how autonomous weapons might violate, for example, the European Convention on Human Rights. If autonomous weapons were deployed within Europe and were used for ubiquitous surveillance, say in counterterrorism operations, they might fail to respect the right to private and family life, which is guaranteed under the convention. Because the weapons might be cyber-related instead of robotic, they could also have adverse effects on freedom of thought, conscience, and religion – all guaranteed as well. Cyber-related autonomous weapons could impinge on freedom of expression – likewise guaranteed – if they chilled online discourse or expression.

Of course the most serious threat posed by autonomous weapons is the threat to the right to life. One might suppose that "civilian safety" *means* right to life, instead of, for example, the right to private and family life. But the right to life – which is guaranteed not only under the convention but also under other important international instruments – is not unlimited. The right to life depends to a large extent on legal permissions regarding the use of lethal force.

These legal permissions, however, differ depending upon whether one is at war or at peace. In peacetime (or "law enforcement") situations, using lethal force requires an imminent threat to bystanders or officers. During war, the threshold for using lethal force is much lower. Applying these distinctions to autonomous weapons suggests that if an individual is identified as a potential or actual threat, autonomous weapons must try to arrest him (unless the threat is lethal and imminent to bystanders; there could be no threat to the machine). If the system is incapable of arrest – say, because it is an aerial system – the choices seem limited to either killing or not killing. But killing an individual in such circumstances would be an automatic violation of the right to life. What is more, doing so would transgress the right to a fair trial. Denying the right to trial undermines the rule of law, itself the most important force providing for and protecting civilian safety.

Danger to everyone

Beyond all this, civilian safety and consequently the right to life are threatened by a potential arms race in autonomous weapons and artificial intelligence. Such a race would expose civilians the world over to undue, potentially existential risk. If autonomous weapons are developed and deployed, they will eventually find a home in every domain – air, space, sea, land, and cyber. They will hunt in packs. They will be networked in systems of unmanned weapons systems. They will patrol computer networks. They will be everywhere. It is hubris, then, to suppose that only one country will pursue their development.

Many states will conclude that their defense requires development, at an ever-quickening pace, of ever-stronger artificial intelligence and weapons with ever greater autonomy. But autonomous systems with learning abilities could quickly get beyond their creators' control. They would be a danger to anyone within their immediate reach. And autonomous weapons connected to each other via networks, or autonomous agents endowed with artificial intelligence and connected to the Internet, would not be confined to a single geographic territory or to states involved in armed conflict. The unintended effects of creating and fielding autonomous systems might be so severe that the risks associated with their use would outweigh any possible benefits (Atkinson 2015).

I have urged in the past that autonomous weapons be banned – the risks of not banning them are too high. But with or without a ban, effective international legislation is required. Many information and communications technologies are dual-use – meaning they can be put to both military and non-military uses. Artificial intelligence can benefit societies, and this good shouldn't be thrown out with the bad. Therefore, states must come together, with the help of experts and nongovernmental organizations, to create a practical, workable approach to autonomous technologies in robotics and in cybersecurity – an approach that precludes weaponization but allows beneficial uses. Thus it is not a question of *whether* to ban or to regulate. It is really a question of how best to do both.

Disclosure statement

No potential conflict of interest was reported by the author.

Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Notes on contributor

Heather Roff is a research scientist in the Global Security Initiative at Arizona State University. She is also a senior research fellow at the University of Oxford and a research associate at the Eisenhower Center for Space and Defense Studies at the US Air Force Academy. Her research interests

include the ethics of emerging military technologies, international humanitarian law, and humanitarian intervention and the responsibility to protect.

References

Atkinson, D. J. 2015. "Emerging Cyber-Security Issues of Autonomy and the Psychopathology of Intelligent Machines." Foundations of Autonomy and Its (Cyber) Threats: From Individuals to Interdependence: Papers from the 2015 AAAI Spring Symposium, Palo Alto, CA. http://www.aaai.org/ocs/index.php/SSS/SSS15/paper/viewFile/10219/10049.

International Committee of the Red Cross. 2004. "What Is International Humanitarian Law?" *International Committee of the Red Cross*. https://www.icrc.org/eng/assets/files/other/what_is_ihl.pdf.

Nakashima, E., and C. Whitlock. 2011. "With Air Force's Gorgon Drone 'We Can See Everything'." *The Washington Post*, January 2. http://www.washingtonpost.com/wp-dyn/content/article/2011/01/01/AR2011010102690.html.

United Nations Human Rights, Office of the High Commissioner. 2016. "International Human Rights Law." United Nations Human Rights, Office of the High Commissioner. Accessed January 12, 2016. http://www.ohchr.org/EN/ProfessionalInterest/Pages/InternationalLaw.aspx.