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Marten Zwanenburg on Killer Robots: Legality and Ethicality of Autonomous Weapons. By Armin Krishnan. Farnham: Ashgate, 2009. 240pp.

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Abstract

A review of:

Killer Robots: Legality and Ethicality of Autonomous Weapons. By Armin Krishnan. Farnham: Ashgate, 2009. 240pp.

Keywords

Autonomous weapons, Military robotics, Legality, Morality, Artificial intelligence (AI), Law of Armed Conflict (LOAC), International Criminal Court (ICC)

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Killer Robots: Legality and Ethicality of Autonomous Weapons. By Armin Krishnan. Farnham: Ashgate, 2009. 240pp.

French General [Foch](#) is reported to have said that "aviation is a good sport, but for the army it is useless." There may be some contemporary generals who feel the same way about autonomous weapons. *Killer Robots: Legality and Ethicality of Autonomous Weapons*, written by Armin Krishnan, visiting professor of security studies at the University of Texas at El Paso, is required reading for those generals. Krishnan points out that the technology for "killer robots" (autonomous weapons that can pick targets and trigger themselves) is already available, and that it is more likely than ever before that these weapons will be fielded.

Essentially, the book consists of two parts—although this division is not made explicit in the book itself. The first part deals principally with technical and military-operational aspects of military robots, while the second part deals with legal and moral questions that the robots raise. In an introductory chapter to the other six, the author sets out the main drivers for the development of robots for military purposes, the expected timelines for their development, and some important definitions. Chapter One discusses the rise of military robots and argues that robotic weapons could make a major difference in future wars. Chapter Two deals with weapons autonomy and artificial intelligence. By Krishnan's definition, a robot must exhibit some degree of autonomy. He posits that the role of humans in controlling military robots, the so-called "human in the loop," is likely to decrease as robots become more popular. An important requirement for the development of autonomous robots is Artificial Intelligence (AI); without it, autonomous systems would remain rather primitive. This chapter discusses degrees of AI and its military applications, and concludes that the more complex and intelligent machines become, the harder it will be to control their behavior.

Chapter Three is devoted to the "Robotics Revolution of Warfare." This refers to the official visions held by armed forces, in particular the US armed forces, of future warfare and the role that robots play in it. Although some armed forces or services may be reluctant, Krishnan argues that they will be unable to resist pressures to increase the numbers and roles for unmanned systems, which will transform all branches of warfare.

Chapter Four focuses on the legality of autonomous weapons, particularly under the Law of Armed Conflict (LOAC), and concludes that regulation is needed. The author focuses on four principles of LOAC, namely necessity, proportionality, discrimination and humaneness. He posits that autonomous weapons could increase respect for these principles, inter alia because they are likely to be more discriminate than current-day bombs. Also, their use could cause less damage and injury if their use leads to a development of machines fighting machines. Theoretically, this could even result in zero-casualty warfare. Krishnan also identifies a number of points of concern in the context of legal aspects, however. One of these is the question of the reliability with which autonomous robots would be able to choose and attack legitimate targets, which is in dispute between analysts of such robots. The author also discusses legal accountability for war crimes committed by robots as a point of concern. On this point he concludes that the legal problems with regard to accountability might be far smaller than some

critics of military robots believe, because he considers there are possibilities to hold the manufacturer/designer, commander and maybe even the robot itself accountable.

Ethical considerations concerning autonomous weapons are the subject of Chapter Five. Krishnan discusses a number of arguments why the use of robots would be ethical. These include the argument that they are more effective and efficient than humans, that their use could lead to more humane warfare and that they protect the lives of one's own forces. This reviewer found the latter argument especially interesting. Would it be unethical to send humans into combat and perhaps death when there are also robots available? This could also have legal ramifications: in a number of countries military personnel has sued their employers for not equipping them adequately. Could they in the future sue for not employing robots instead of humans?

The author also discusses a number of ethical concerns with autonomous robots. These include the fear that their use would lead to moral disengagement, the argument that killing is too grave a matter to be left to machines, and the potential impact on military professionalism. The latter includes the concern that the use of robots would lead to military “de-skilling,” because military skills are not needed to command autonomous robots. In this chapter, Krishnan also touches on the question of robot rights, the equivalent of human rights for robots. He does not seem to consider this an issue which is very topical at this moment. However, he suggests that this might change in the future and that whether it does depends not so much on how much robots will come to resemble humans, but rather to what extent humans will develop empathy for robots.

The final chapter sets out a number of proposals for regulation of autonomous systems. These include measures to prevent proliferation of autonomous robots, in particular to terrorists. They also include the suggestion to develop an international law framework for arms control of autonomous robots, which could be done along the lines of the regulation of mines. Also, Krishnan suggests a prohibition of “self-learning” to avoid a “Terminator scenario” in which robots take over the world.

The book is well-written and thus very readable, even for readers without a technical background. It is a very useful starting point for those interested in robots and autonomous systems in the military field. However, the second part of the book, in particular the chapter on the legal aspects of robotic warfare, is somewhat disappointing. It is clear that the author is not a lawyer. This can be deduced from inter alia his discussion of the principles of military necessity and proportionality in the LOAC, which depart from the generally accepted definitions of these principles. The same goes for the author's reference to the International Criminal Court of Justice, which conflates the International Court of Justice and the International Criminal Court. These are two separate institutions, albeit both are in the Hague . Having said this, both the chapter on legal aspects and the chapter on ethical aspects raise numerous interesting questions concerning the advantages and dangers of autonomous systems and weapons. These include notably questions of the application of LOAC rules of targeting and of accountability, as well as the (emotional) relationship between human military personnel and robots. These questions are useful starting points for further research and reflection, which will certainly be necessary if the developments Krishnan expects indeed take place, as is likely to be the case. As the author points out, there is every reason to expect that autonomous weapons will be fielded in the not-so-distant

future. In that case, possibilities for regulation should be considered. The suggestions made for this purpose by the author merit attention, even if not all of them appear to be equally realistic.

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