

Dr Rafał Kopec  
The Institute of Security and Civil Education  
Pedagogical University in Krakow  
Ingardena 4  
30-060 Krakow  
rkopec@up.krakow.pl  
ph. 0048 12 662 66 08

## **Out of the Loop? Toward Autonomy of Combat Robots**

The trend to the robotisation of battlefield is just at the start of the long road. The use of combat robots has been limited so far, but they are one of the fastest growing niches in the military industry. As a tool of war robots are at the same point of the development as planes at the beginning of the First World War or tanks in 1916. Their capabilities are relatively moderate, the doctrine of their reasonable use is still in its infancy, but their potential is immense.

The expansion of combat robots, like it was in the case of other groundbreaking weapons, stirs much controversy. Some parts of the military resist this proliferation. To some extent this resistance arises due to conservatism, typical for military establishment. However, the resistance to the transition from manned to unmanned fighting vehicles is also the result of the anxiety of dishonouring war values, of the shift in the character, or even the nature of war and the nature of warrior. Spreading of combat robots could undermine the most significant determinant of war, which is not killing, but the risk of being killed. The sense of sacrifice, but also the sense of mutuality, is what defines the traditional view of war. An extensive use of robots, first of all unmanned aerial vehicles (drones), is an indicator of risk-averse warfare waged by Western post-heroic societies. Armed drones are perceived as an antithesis of suicide bombers (absolute security versus absolute sacrifice, the triumph of the technology versus the triumph of the will).

However, the question arises: is there something new? The whole history of war is the pursuit to be untouchable (e.g. Achilles) and combat robots appear as the fulfilment of an eternal desire of weapon's creators: to hit the enemy from a distance. Remotely controlled robots, with a human in the decisive loop, seem to be the next stage of an ancient trend towards increasing the distance between combatants. In spite of the disagreement in regard to the American policy of targeted killing and signature strikes (without any precise identification of the target), the only controversial factor is the violation of international law.

Remotely controlled drones are the last incarnation of guided weapons, smart weapons, and stand-off weapons. We have known all these things for several dozen years.

The situation looks differently when it comes to autonomous combat robots, to machines that can make a decision of killing the enemy on its own. In fact, the distinction between remotely controlled and autonomous machines is a simplification. One can recognize the following levels of the autonomy ladder: direct (but remote) human operated mode, human assisted mode, human supervised mode, fully autonomous mode, adaptive mode (self-learning). Each level of autonomy means more independence. It also reduces the role of humans in the decision cycle. The last two modes should be considered as free from human control about making decisions (a man out of the loop).

And again – the question is whether this situation should be perceived as a completely new game. Weapon systems able to make decision of killing an enemy single-handedly have been used for quite a long time, first of all in surface-to-air missile systems, antiballistic missile systems, close-in weapon systems and possibly even in the Soviet nuclear control system Perimetr (the so-called Dead Hand). However, the robots' capability of responding to any changes of environment means that the level of decision complexity increases. Dealing with new situations in an uncertain environment meets the criteria of intelligence.

This paper discusses a growing autonomy of warbots. In particular, it focuses on the following points:

- What capabilities are required to recognise a machine as an intelligent one? Is it appropriate to apply the same criteria to carbon-based and silicon-based intelligence? Indeed, machines have surpassed humans in many cognitive activities.

- Do Asimov's laws of robotics matter when the majority of robotics comes from the military?

- How real is a danger of creating machines acting on their own, beyond programmers' intention? The robots' takeover, with machines replacing humans at the top of the food chain is one of the most frequent motives of science-fiction (e.g. Terminator, Matrix, 2001: A Space Odyssey, just to mention a few of the most well-known examples).

- Is it possible to build ethical war robots, with functional morality, or at least programmed to respect law of war? Perhaps, due to the elimination of emotions (fear, rage, and desire of revenge) machines could behave in a more humane manner than humans do.

Rafał Kopeć, Ph.D. He earned his doctoral degree at the Institute of Political Science of the Pedagogical University in Krakow exploring weapons of mass destruction in international politics after the end of the Cold War. At present he is working for the Institute of Security and Civil Education at the Pedagogical University in Krakow, where he designs and teaches undergraduate, graduate and postgraduate courses in politics of international security, theory of politics, and current problems of security worldwide. His research interests are broadly focused on politics of security, strategic studies and contemporary armed conflicts. He published several research papers in journals and a book “Strategie nuklearne w okresie pozimnowojennym” (“The Nuclear Strategies in the Post-Cold War Era”, Pedagogical University Press, Krakow 2014).