How can we limit the threat posed by military robotics?

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Military robotics is a broad field of applied technology which may receive significant enabling input from all of the GRINN technologies. The success of today's UAVs, small ground robots and autonomous undersea vehicles owes a great deal to nanoelectronics and nano-materials technology, which are the basis for the computers, sensors and communications systems.

Making these robotic warriors fully autonomous would require much greater sophistication in artificial intelligence. Neuroscience, genetics, bioinformation sciences and statistical methods of processing and modeling large data sets are entwined at the cutting edge of efforts to create the human-like AI that would be needed to drive autonomous weapons or robot soldiers through complex human-inhabited and other combat environments. Such efforts are expected to unfold over the next two decades.

Robotization of warfare has already begun, using remotely operated drones and robots with limited forms of autonomy, as well as "lethal robots" as venerable as booby-traps and mines. Nonlethal autonomy expands with available capabilities, and so does lethal autonomy. Weapons may initially select targets from within kill boxes, or cue humans, designate targets, be designed to safety-discriminate noncombatants, or return fire and even recognize threats and engage them autonomously.

We are at a historical juncture where we must consider advanced artificial intelligence in control of the military logistics, battle management, command, control, communications and intelligence systems that run our wars, as well as AI-based autonomous weapons dispatched on their own missions to seek, locate, identify, verify and engage military objectives.

Defining autonomous weapons (AW) as those that autonomously locate, identify and designate targets for weapons fire and that autonomously decide whether and when and how to engage them (autonomous here meaning free of human input), such weapons are now proposed or in development. Some types already exist. Targets could include human beings, e.g. if identified by machine as enemy.

Recent proposals to ban or observe a moratorium on autonomous weapons, or to regulate or limit them, have been answered by the Pentagon with its Directive on Autonomy in Weapon Systems, DoDD 3000.09, which asserts that the United States will develop, acquire, and use autonomous weapons, after thorough testing, in accord with established doctrines and rules, and others yet to be written, subject to "appropriate levels of human judgment." [1]

However, the United States may observe such rules, and others may not. How can we avoid a global robot arms race? Proponents of a treaty banning autonomous weapons do not need to prove that AW are already illegal under international humanitarian law (IHL) or the law of war (which would seem to imply that a treaty would be unnecessary). We need only show that AW pose a threat to human and global security which can be addressed by arms control (of some kind which we can propose). [2]

Most people are already opposed to killer robots running loose killing people. The very real dangers of a robot arms race should be enough to motivate serious efforts to prevent or stop one.

- [1] http://icrac.net/2012/11/dod-directive-on-autonomy-in-weapon-systems/
- [2] http://icrac.net/2012/11/the-principle-of-humanity-in-conflict/