Wired for War: The Robotics Revolution and Conflict in the 21st Century
P.W. Singer
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Reviewed by Lauren Williamson, UK Defence Forum Researcher

Artificially intelligent robots armed with lethal weapons: this sounds like the concept of a sci-fi novel, but P.W. Singer's book Wired for War demonstrates that this is the reality seen in research labs and on battlefields today. The US Military has been employing robots in Afghanistan and Iraq; these machines are altering the way the military conducts not only ground operations, but research, development and espionage. And Singer's findings suggest these innovations lay the foundation for a period of exponential advancement unparalleled in human history, making his work as disturbing as it is fascinating.

P.W. Singer's book immediately takes the reader into an emotionally gutting scene of a group of soldiers during an IED explosion. He then segues into examining the role of robots in disarming explosives and saving lives. It's clear Singer has seen his fair share of warfare during his work for the US Department of Defense and while serving as a Director at the Brookings Institution, but he is somehow able to capture the humanity amidst such brutality. He weaves together vignettes, anecdotes and intriguing facts, painting a vivid picture of a not-so-distant future in which every household in America will have at least one domestic robot, and weaponized manmade creatures are fighting our wars.

Readers would do well to study the author's note as it provides a glimpse into Singer's childhood and exposes the roots of his fascination with warfare. A caveat lies in that it is difficult sometimes to envision the physical manifestations of the dozens of robots described in depth throughout, even if you refer to the eight pages of photographs wedged into the centre of the book. The solution is a quick perusal of Singer's personal website, which has more photographs, videos of robot demonstrations and combat footage from UAVs.

The history of robotics reaches surprisingly far into the past, but their involvement in warfare is pretty recent. The Gulf War was the first computer-heavy war; however, it has only been in the last decade with the wars in Afghanistan and Iraq that large, durable, weapon-wielding, desert-travelling robots have emerged. The military's recent counter insurgency efforts combined with the public's disgust for losing lives has prompted the commissioning of more robots, even replacing traditional military positions. Robots see better in the dark. Their targeting is more precise. They know no fear. They don't have to squint in a dust storm. They can fly and take video for hours on end.

One DARPA official says the human is now becoming "the weakest link in defense systems." And a startling fact is that the US military has no clear doctrine for these new technologies. This, Singer argues, is the real revolution in military affairs. The US is taking the human out of the equation. Yet future warfare might still be against less tech-savvy enemies like insurgents or more equitable opponents like China whose research efforts could easily overtake those of the

US. These developments are creating all kinds of philosophical contraindications by altering the traditional identities and roles in war and the very understanding of the sacrifice of human life. And prosecuting war crimes becomes a very tangled issue. Who is responsible for the violation and intent: the programmer, the financier, the military, or the direct operator (if the robot is not autonomous, that is)? Does a robot have a right to act in self defence? If so, is it entitled to its own set of rights?

There is a wealth of knowledge crammed into the book as Singer lays a solid foundation for those ignorant of the industry. For instance, while a computer takes and alters data internally, a robot is a computer with the ability to manipulate its external environment or act on information. Beyond that, you have artificial intelligence, or AI. A robot with AI has a computer programme that is able to acquire new information, synthesize it and re-programme itself to be more intelligent than before. In other words, it is able to learn and evolve on its own. What's particularly disturbing is that some strong AI programmes have proved robots can develop their own personalities beyond their creator's intention.

Ideas like these sound a bit alarmist. As does excerpts where Singer describes tiny drones, the size of dragon flies, which would make government espionage almost undetectable. When Singer writes about the idea of the Singularity, the post-human moment where technological advancement is so rapid humans lose control, it is hard to remember the book is not fiction. Interestingly, one section of the book is devoted to the influence of sci-fi writers on science reality. Whereas years ago fiction writers' imaginative concepts helped inspire researchers - indeed, H.G. Wells wrote with impeccable foresight and accuracy - today, the opposite is true. Sci-fi writers are now being inspired by the robotic inventions and creatures already springing forth from high tech laboratories.

Singer writes with such a command of the subject that it's impossible for a layperson to identify any aspects of this technological revolution that he may have left out of the 512 page work. That being said, part one is devoted mostly to historical background, explanations and definitions, which leaves an engaged reader frustrated by all the unanswered questions about the impact this robotics age will have on ethics, terrorism, just war norms or societal structures. Fortunately, these issues are addressed in the second part of the book, it just requires several hundred pages of reading to get to it.

The bottom line is that there is a reason Wired for War was named the top non-fiction book of the year by The Financial Times: a comprehensive dialogue about this revolutionary age needs to happen -- and soon. It is a thrilling read, pertinent to security personnel, researchers, politicians and anyone who is simply curious about the future. Singer's book, which exposes the pros and the cons of these advancements, feels like an untainted version of the truth that even nonstop news outlets have thus far failed to report.

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