



Wired for War: The Robotics Revolution and Conflict in the 21st Century

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We are just beginning to see a massive shift in military technology that threatens to make the stuff of I, Robot and the Terminator all too real. More than seven thousand robotic systems are now in Iraq. Pilots in Nevada are remotely killing terrorists in Afghanistan. Scientists are debating just how smart - and how lethal - to make their current robotic prototypes. And many of the most renowned science fiction authors are secretly consulting for the Pentagon on the next generation.

Blending historic evidence with interviews from the field, Singer vividly shows that as these technologies multiply, they will have profound effects on the front lines as well as on the politics back home. Moving humans off the battlefield makes wars easier to start, but more complex to fight. Replacing men with machines may save some lives, but will lower the morale and psychological barriers to killing. The "warrior ethos", which has long defined soldiers' identity, will erode, as will the laws of war that have governed military conflict for generations.

While his analysis is unnerving, there's an irresistible gee-whiz quality to the innovations Singer uncovers. Wired for War travels from Iraq to see these robots in combat to the latter-day "skunk works" in America's suburbia, where tomorrow's technologies of war are quietly being designed. In Singer's hands, the future of war is as fascinating as it is frightening.

Wired for War: The Robotics Revolution and Conflict in the 21st Century Details

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From Reader Review Wired for War: The Robotics Revolution and Conflict in the 21st Century for online ebook

Cwn_annwn_13 says

Well apparently wars in the future will be fought by detached from reality sociopathic nerds with videogame joysticks. Military people "in the know" that were interviewed see the writing on the wall and acknowledge that the role of the soldier will be hugely different in the not so distant future. Drones will make the fighter pilot obsolete. Robotics will eventually make the common foot soldier obsolete. The future military could easily be pencil neck geeks thousands of miles from the action controlling drones and robots like they are playing a videogame. They are already doing this but it hasn't been perfected to the point where they can phase out manned jet fighters or the common infantry soldier.

The most interesting thing in Wired for War may be when he goes into how science fiction has influenced the development of military technology. He takes the position that science fiction inspired scientists into making these things reality. This may be true in some cases but I also lean toward a lot of science fiction being what is known as predictive programming where the world controllers use science fiction to psychologically condition the masses into accepting certain things and conditions. Its undeniable that they sociologically and politically (just read H.G Wells Open Conspiracy, Huxleys Brave New World or Orwells 1984) so why not with technology too.

Shoti says

Sadly, it is not only robots who are wired for war. Humans too. As Singer rightfully puts it, one of the original sins of our species is its inability to live at peace. However, the worst nightmare of any democratically elected politician is a war with lots of casualties. That is also the surest way to a crushing defeat in the next election. So, it comes as no surprise that the military is the biggest funder of robot R&D globally, with the US military funding as much as 80 percent of all AI research in the US.

Robots are ideal for roles what humans soldiers call the "Three Ds" ("Dull, Dirty or Dangerous"). The human pilots pass out from fatigue, hunger or a pressure in their kidneys after 10 hours in the air? Not a problem, let's put some robots in their place. DARPA already announced a plan to work on a drone which they hope can stay aloft for as long as five years. Simply, technology does not have the same limitations as the human body. It used to be that when fighters made acceleration or high-speed turns the same g-force that knocked the human pilot out would also tear the plane apart. In other words, it used to be a draw between humans vs. technology and they could work well in tandem. However, while the fighters have significantly improved the human body has not, so the current fighters could maneuver so fast and hard that its pilots would black out. Solution? Let robotic pilots (i.e. technology) 'man' the fighters (i.e. technology) without human intervention. Also, the decision making loop is getting shorter and shorter and simply there will not be any time left in it for humans. The very best human fighter pilot needs at least 0.3 seconds to respond to any simple stimulus and twice as long to make a choice between several possibilities. How much time does a robotic pilot need for the same? Less than a millionth of a second. This is not only about planes. We can test the exact same logic in various fields of warfare only to arrive at the same conclusion: the human is becoming the weakest link in defense systems. The future shall not be like in Star Wars where Y-wings and TIE fighters are piloted by humans (Luke, Kylo Ren, Poe, etc.) with minimal robotic support (R2D2, BB8, etc.). No, there will be robotic pilots only because humans would have no chance against them. (Caveat: I have disregarded any possibly positive impact in favor for humans derived from the currently unknown Jedi / Sith powers.). All in all, unmanned systems may lessen the terrible human costs of war. 'Cubicle warriors'

you thought mushroom clouds were horrifying and kind of cool looking at the same time you will love this book. Technology and robotics are fascinating and warfare is as well. When you combine them you get the most interesting apocalypse in the world. Sorry to be flip but I am tired today. Good book and definitely of interest.

Joshua Stein says

Singer's book is good, given that you go into it with your expectations grounded in what the book is. This is popular science writing, with some journalism on contemporary war. Singer is a very good writer, and keeps the book accessible and relatively light; it is easy to read, despite its impressive length and the breadth of the subject matter.

Normally, with a book written this way, I might suggest that it would be better if the focus of the text was much more narrow, but I think that what makes Singer's book so good is that it covers the enormous scope of the subject matter so well. That I didn't feel, at any point, that a particular area was being "shorted" speaks a great deal to the quality of the book and the rigor of the chapters. Each chapter is only an introduction, to be sure, and if Singer had wanted to narrow the focus, he certainly could have; but the scope of the book isn't a hinderance for Singer in the way that it is for many others. I think this is a great study of what to do if you're writing popular science.

Singer runs very heavy on a lot of the cultural references. The book is definitely geared towards the Generation X pop-culture approach to writing. If you're big on science fiction, the references to folks like Orson Scott Card and a number of important film and book franchises (from Star Wars to Star Trek to Dune) will make the reading more accessible. I'm not sure how much that negatively effects the reading for those who aren't as interested in science fiction, though it isn't gratuitous.

This is really a book for anyone who is even superficially interested in the sorts of technology being developed for and deployed in contemporary war. For those who are familiar with some of the work already, the broad scope of the text gives a nice opportunity for some information about other technologies that may be new, though it is unlikely that an expert on UAVs is going to learn something new about them from Singer, though its possible with Singer's review of the history.

On the whole, the book is informative, thoughtful, and accessible, which is a rare combination. While Singer may, at times, dial back the intellectual weight of the book, he doesn't compromise his emphasis on critical thoughts regarding the use of technology and the ethical implications. All around, one of the best pieces of popular science writing on the market.

Jonathan says

Fascinating topic.

At 100pp this would have been an average overview. At 200pp it might smack of sloppy editing. But at 436pp this begins to feel like malice.

Oddly wooden sense of humor, leaden writing, dull arguments... no more book recs from Jon Stewart!

Jack says

Robots. They are here and they are here to stay. DARPA, ONR, NASA, and the Terminator are our future combat systems. In the "short" time I have been in, I have seen satellites become our hubs. Probability calculations determine our expectations and our response. We now see robots enter the fray. Bomb disposal, AI, and others are shaping our land forces. And in the starry nights of Iraq, if you listen closely, you can hear them. They are always there. Drones. Hundreds of them. Remote controlled predators winging across the night with unblinking eyes. Most are flown by pilots in the US. And they have racked up enormous kills. Drone warfare is here. Read the book and understand our future war. Our future.

Hadrian says

This book looks at the technical, organizational, and psychological effects of using robotics and unmanned vehicles in modern warfare. Optimists might say that this is a revolution in military affairs, as robots will be able to do tasks too dull, dirty or dangerous for humans, and will be able to accomplish tasks faster and more efficiently as well.

The chief difficulties with this revolution are multiple. Here are a few. First, the problems of command structure, whether instant access and communication for all officers in the command structure might lead to micromanagement. Second, whether there is the case of whether robots develop autonomous targeting and accidentally harm the wrong target. A third problem is psychological - troops becoming attached to robots and trying to 'rescue' them where they should not, or whether the technicians who pilot the drones some thousands of miles away feel distant from the effects of combat. Fourth, there is the problem of security, or hacking. Fifth, there is the problem of privacy and security, whether individuals could be placed under more compromising and embarrassing surveillance.

The issue of unmanned warfare will not solely remain the domain of the United States Armed Forces alone. Our allies in Europe, as well as the Chinese, are already working on developing their own surveillance drone capacity.

This book does a convincing job at relaying the chief problems of drone warfare. Some of the information is slightly out of date after three years, but this is not due to the author's fault so much as it is the rapid advancement in this field. His projections are largely correct.

This book only receives three stars for its overoptimism over the Singularity, as well as some other minor factual errors. Other reviewers might note the author's heavy usage of pop culture metaphors, but I do not mind - science fiction has long had a 'feedback' effect on the development of technology since at least the 1930s.

A reliable guide to the major questions of robotic warfare. 3.5/5

Jerome says

I first saw the author on an episode of Oliver North's "War Stories" dealing with recent technological advances in warfare. It mentioned him as the author of this book, so I rushed to order it at my library.

For such a weighty hardback, it's remarkably hard to put down, and each section evolves intelligently from the last. I particularly enjoyed the references to modern culture, given that robotics has largely been a subject of science fiction in the last few decades rather than yielding anything practical in reality.

Well, at least so I thought - it turns out that over 12,000 robots are at war in Iraq and Afghanistan as we speak. The companies producing these machines were spurred by the very real necessities of dealing with guerrilla warfare, and avoiding the human toll associated with such difficult environments. Through a combination of human-controlled and artificially-intelligent hardware, these robots back up our soldiers and provide a super-human level of robustness and accuracy.

The author raises the complex moral questions associated with having machines killing people on the frontline, and the issues that arise when mistakes occur. There's also a fascinating discussion of stress disorders that remote pilots are suffering from - these men and women sit in offices in the US, controlling machines on the battleground far away, and return home for dinner every day after "a day's fighting".

Yes, it is about the use of robots and automated systems in war but it goes far beyond that, discussing the many ways that computers and robots have entered our daily lives and the ways they are likely to do so in the future. The book is not just about robots and technology but also about human beings and how they related to their creations. Consequently, when the author makes the link between advances in robot design and science fiction it makes perfect sense, although it is an angle I hadn't previously considered. This book's strength is that it walks that fine line -- on the one hand it is carefully researched and documented but on the other is written in a highly readable style so that the reader is both informed and entertained. You know much more when you are finished and had fun in the process. Who could ask for more?

Also the chapter on the "Singularity" bothered me because it shows a distinct lack of understanding of the current state of the art. Computers are not getting faster at the moment. Processor speeds have flat-lined at about 3.0 GHz for the past several years because any faster and heat dissipation becomes an intractable problem. Even the speed of super-computers is capping out for the same reasons (a little more complex -- heat dissipation is easier if processors are spread out, but higher speed requires physical closeness because of the time needed for current to travel. So high-speed computers need to be compact for speed, but spacious for heat dissipation...). New computers today are coming out with more cores, so computers technically have more raw computing power (though even this has near-term limitations that prevent us from the Singularity) but computers are awful at taking advantage of parallelism.

Singer points out that our brains are massively parallel, and this is why we have an edge on computers. This is true, but even if we had a computer with the same amount of parallelism, we couldn't take advantage of it. Someone has to program the thing, and no algorithms exist that mimic the behavior of the human brain (contrary to the picture that tech bloggers paint). The fact of the matter is, we don't know how the human brain works. Singer's main argument here is pointing to the trend: compare what computers can do today with what they could do 30 years ago. The flaw is in assuming that the same trend will continue. Extrapolation is notoriously bad, even though it seems to have such predictive power. The reason for such growth can be explained by us tackling the "low-hanging fruit" as far as computers go, and we're fast approaching an era of more incremental improvement as the "easy" problems are solved. Futuristic technologies such as alternative processor architectures, Quantum computing, optical computing, etc. are nowhere near workable. But even if we had a full-fledged Quantum computer right now, we really wouldn't know what to do with it. The software algorithms don't exist for it, and many of those that do don't provide dramatic improvement over what we have today.

Lou says

This book sucks.

Let me elaborate. I should have known this was going to suck when he said Bill Simmons was his favorite writer. Aside from any problems one might have with Simmons, easily the worst thing he's done is produce an army of sports writers trying to be funny and make tons of pop culture references. So when a historian from a think tank writes a history of drones and robots in the military, well, yeah. It sucks. Hard. You can literally go through each pages noting where there italic references are, from Star Wars to Doctor Who to War Games to whatever. Blegh.

Also, he spend WAY to much time trying to make a point that while the military has all this fancy robot shit, even we have one, some of us! Roomba! Ugh. Fuck you, dude, for throwing that in at least 50 times in the first 100 pages.

Just terrible.

Andrew says

Any book on existing technologies is going to date with alacrity, and this is no different. Having been published in 2009, it seems overly opportunistic that this was turned into a book. This should be a quarter its existing length, and even with that it would have required some very free-handed wielding of the editor's red pen. Essentially an over-extension of a magazine article, it is heavy on the cheer-leading descriptions and quotations, and all-too-scant on actual incisive analysis. The most enjoyable passages are when the lessons and ideas of other tacticians, strategists, and other miscellaneous thinkers of war are brought to bear.

The only way this could have been justified at its present length, and in the book form would be if Singer brought something new to the discussion, or if he had acted as some sort of referee in the debate whipping back and forth between the military and technology/research communities. Unfortunately, the need to gain and safe-guard access to military sources which a project such as this thrives on forbade the latter, which in turn prevented this transcending its decidedly ho-hum-brow nature to present some sort of intelligent and original argument.

If you are interested in technology and its military applications, I would advise you to steer clear of this. Far better to track down some magazine articles online, and subscribe to some sites such as <http://singularitarian.tumblr.com/>

Michael says

Owing to the rapid progress in the robotics field, this book is surely already out-of-date four years after its publication. I didn't have any knowledge of military robotics beforehand, but I have to wonder whom the target audience is for this. Maybe readers who are less aware of the fictional origins of robots, hence the many and sometimes snarky comments? Singer doesn't skimp on detail, and at times I felt like there was too much conceptual detail for my tastes.

I also have to ask: when a writer is talking about the US military forces, shouldn't they capitalize them?

Example: talking about the Air Force seems like it should require capitalization because "air force" in reference to the USAF seems incorrect.

Christopher says

This is a freakin' awesome book! Singer, in this book on robotics and its use in the military, has just blown my mind. Reading about many of the things in this book seems like science fiction, yet it is all real. Robots that can stay in the air for over a day, robots that can act as sentry guards for army bases, robots that can see through walls, and even robots that can replace lost limbs; it is all in here. But what really blew my mind was not just the detailed accounts of these new technological innovations and their capabilities, but also the legal, ethical, and moral questions they raise for our generation. Singer doesn't just sit back in awe of these new toys, he asks the questions everyone should be asking: should we arm robots with lethal weapons? Should we bring robots' intelligence and autonomy to a level where they are indistinguishable from humans? Should autonomous robots have rights like a human? Who's responsible when an autonomous robot kills or injures someone? And should we build robots for sex? All these questions are explored. My only complaint is that Singer tends to wander off from his original topic in many of his chapters. Many times he starts with a good premise, but then wanders off into a different topic. Ultimately though, this one of the coolest, scariest, and most thought-provoking books I have read in a long time. READ THIS BOOK!!!!!!

Lucas says

I was hoping Wired For War to read like a Lawrence Lessig book, where conceptions that were vague in my own mind before starting would be rendered crystal clear in the text. It's worth reading but not up to that level- his main offering is that things are changing and the right people aren't paying enough attention.

The first 200 pages are just overview of current systems, with a Popular Science level of credulousness and lack of critical thought.

Next 200 pages get into issues, but the author is always quoting interviewees and not offering much himself. The final 30 pages has some contains the only real recommendations and guidance that come from the author.

The book could have been significantly shorter and no more lacking in content if the amount of popular culture references and direct quotations of interviewees had been refined into more succinct text.

The largest problem with the book is the over-emphasis on the current context: asymmetrical American military supremacy against numerically and technologically inferior but highly motivated foes. He mentions and periodically hints at the potential for robot vs. robot conflicts but doesn't analyze the implications, such as the potential for unlimited and economically ruinous arms races, and the ease of escalating some conflicts into real wars, while removing the self-perpetuating nature of other conflicts where once soldiers are in harms way, it becomes necessary to send additional soldiers to honor the sacrifice of the first set and so on.

There is also a repeated claim (that is definitely coming from the author) that military robots will have no desire for self-preservation. But this is nonsense: the unmanned systems are going to be limited in quantity (and probably expensive) and vulnerable to enemy attacks, therefore they will need to have the ability to escape harm in order to accomplish their current and future missions.

The presence of emotions in robots is also automatically dismissed without thought: anger and fear and other

emotions could have analogs designed in that would be useful in war for the same reason they were useful in the course of human evolution.

There is very little focus on the more problematic uses of robots, like empowering individuals or small groups to do harm while avoiding responsibility (like in the case of covert action/terrorism).

It is possible to make robots more ethical and humane than people because rules of engagement can be carefully selected, and the robots can err on the side of suffering damage vs. hurting civilians. But in a more symmetric conflict (or the asymmetry advantage going to the other side), it's likely the protect-civilians priority will be reduced vs. survival and mission completion. Any inherent increase in humanity will be due to increases in situational awareness only a robotic system could have.
