STATEMENT

OF

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BEFORE

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COMMITTEE ON OVERSIGHT AND GOVERNMENT REFORM,
SUBCOMMITTEE ON NATIONAL SECURITY AND FOREIGN AFFAIRS

Thank you very much Mr. Chairman and members of the committee for the opportunity to testify today. It is an honor to be a part of this important session on a topic that is crucial to our national security, but often crucially misunderstood.

As background, I work at the Brookings Institution, where I lead our research and analysis on 21st century defense issues, including on emerging actors and technologies in war. Several years back I became interested in just what was going on in this historic revolution, as robots begin to move into the fighting of our human wars. I interviewed everyone from robotic scientists and the science fiction writers who inspire them; 19 year old unmanned systems operators fighting wars 7,000 miles away, to those who command them, from Predator squadron commanders all the way up to the 4 star generals. I was interested in the politics of this and so met with White House advisors and military service secretaries. I was interested in the other side of perceptions and so pulsed the views of groups that ranged from Iraqi insurgents to Arab and Pakistani generals, and news editors across the Middle East and South Asia. Finally, I was interested in the questions of ethics, law, and right and wrong, and so interviewed military lawyers, as well as individuals with organizations like Human Rights Watch and the International Red Cross. Their stories, which I captured in my book *Wired for War*, were not just fascinating, but also shine a light on the political, legal, social, and ethical issues that ripple outwards.

What I would like to do today is briefly walk through where we stand now and then focus on what I see as some of the key policy questions that face us in this exciting, but sometimes scary new domain.

When the U.S. military went into Iraq in 2003, it only had a handful of unmanned systems in the air. The invasion force used zero unmanned ground vehicles. Today, we have over 7,000 of these unmanned systems in the air, ranging from 48-foot long Predators to micro-aerial vehicles that a single soldier can carry in their backpack. On the ground, we have over 12,000, such as the lawnmower-sized Packbot and Talon, which help find and defuse the deadly roadside bombs.

But we need to remember that while they often seem like they are straight out of science fiction, such PackBots and Predators are merely the first generation—the equivalent of the Model T Ford or the Wright Brothers' Flyer. Even more, they are being armed with everything from Hellfire missiles to 50 caliber machine guns. So, the term "killer app" (short for "killer applications," technologies that send massive bow waves onto industries, like what the I-Pod did to the music industry) is taking on an entirely new meaning.

The historic parallels that people make to where we stand now with robotics are instructive. Many scientists parallel unmanned systems today to where we were with "horseless carriages" back in 1909-1910, at the start of something so big we can only wrap our minds around what it is not. That is,

automobiles and the resulting mechanization didn't just become change industry and warfare, it also reshaped our cities through the creation of suburbia, gave power to Middle East potentates who lived above oil deposits, and led to the requirement of new laws, "traffic laws."

Others, such as Bill Gates, have described robotics as being where computers were around 1980; if this is the case, think how the computer reshaped everything from our economy to our social relationships to how we fight wars and now even where we fight them (cyberwar). Finally, others make the parallel of robotics being much like the atomic bomb in the 1940s, a cutting-edge technology, of immense power and potential, but also a genie that we will not be able to put back into the box.

The point here is that every so often in history, the emergence of a new technology changes our world. Like gunpowder, the printing press, or even the atomic bomb, such "revolutionary" technologies are game-changers not merely because of their capabilities, but rather because the ripple effects that they have outwards onto everything from our wars to our politics. That is, something is revolutionary not so much because of what it can do, but rather the tough social, military, business, political, ethical, and legal questions it forces us to ask.

So, what are some of the key questions emerging in the growing field of robots and our wars?

1)   Where is the (Unmanned) Military Headed?

The US military has gone from barely using robotics to using thousands of them in a bureaucratic blink of an eye. Its current plans, as one 3 star general described are that it will soon be using "tens of thousands." But as one USAF Captain put it to me out in CENTCOM, the problem is that "Its not "Let's think this better, it's only "Give me more.""

How do we ensure it buys the right ones and not over-priced, over-engineered, unwieldy systems that have gold-plated processors? How do we maintain competition and experimentation in an emerging sector in the defense industrial base? Knowing that having the right doctrine can be the difference between winning and losing wars, between committing America to the 21st century version of the Maginot Line vs. the Blitzkrieg, what are the proper organizational structures and doctrines for using these new systems? How do you ensure digital systems' security, so that foes can't tap into their communications, as insurgents in Iraq were able to do with a $30 software package they bought off the internet? How do we better support the men and women operating them, who may not be in the physical warzone, but are experiencing an entirely new type of combat stress? How do you ensure their future career prospects, so that organizational culture does not stymie change?

Another area is what is the proper division of warrior and civilian in this space? That is, if this area is the future of the force, is it proper that presently 75% of the maintenance and weapons loading of systems like the Predator have been outsourced to private contractors, including to controversial firms like Blackwater, while other Army systems operating in Iraq have been described as "government-owned-contractor operated?"

2) Are We Engaged in Three Wars?

As of March 12, 2010, American unmanned systems had carried out 118 known air strikes into Pakistan, well over double the amount we did with manned bombers in the opening round of the Kosovo War just a decade ago. By the old standards, this would be viewed as a war.

But why do we not view it as such? Is it because it is being run by the CIA, not by the military and thus not following the same lines of authority and authorization? Is it because Congress never debated it? Is it because we view the whole thing as costless (to us)? Or, are the definitions are changing, and what used to be war, isn't anymore?

3) What are the Perceptions of Robots in War?

How do robots change the public's and its representatives' relationship with war? Does the ability to YouTube video clips of combat turn war into a form of entertainment? Does it lead to Monday Morning Quarterbacking of our troops?

In turn, what about the perceptions of publics 7,000 miles away? Do they view our use of robots as "efficient" and "costless" as we report in our media, or as one newspaper editor described in Lebanon, "cruel and cowardly"? What does it mean when "drone" has become a colloquial word in Urdu and rock songs that Pakistani youth vibe to talk about America not fighting with honor? How does the reality of our painstaking efforts to act with precision emerge on the other side through a cloud of anger and misperceptions? Is America painting itself into the same corner that Israel did in Gaza, where it got very good at targeted strikes of Hamas leaders, but also good at unintentionally inducing 12 year old Palestinian boys to want to join Hamas?

4) Who Should be Allowed to Use This Technology?

It is not just the military that is using unmanned systems. DHS is flying them for border security. But so are some of the civilian vigilante "border militias," as well as criminals using them to scout targets. Local police departments like Miami Dade have gotten authorization to use them, and the FAA is exploring opening up the wider airspace, a crucial step to the continuation of the field. But, as one federal district court judge put it to me, the legal questions they raise in such areas as probable cause and privacy will likely reach to the Supreme Court. How about me, does the 2nd amendment cover my right to bear (robotic) arms? It sounds like a joke, but where does the line stop, and why?

5) Can the Laws Keep Up?

Robotics do not remove humans from the decision making, but they do move that human role geographically and chronologically. Decisions now made thousands of miles away, or even years ago, may have great relevance to a machine's actions (or inactions) in the here and now. But while technology moves at an exponential pace, our institutions are struggling to keep up. For example, the prevailing laws of war, the Geneva Conventions, were written in a year in which people listened to 45rpm records and the average home cost $7,400. Is it too much to ask them to regulate all the nuances of a 21st century technology like a Reaper system, that is being used to target an insurgent, who knows he is not supposed to hide out in a home surrounded by civilians, and that is exactly why he does? That is, with the 20th century laws under siege from both sides, do the laws need to be updated, how and in what ways?

6) Will America go the Way of Commodore Computers?

If this is a growing industry along the lines of computing or automobiles, why does the US not have a national robotics strategy, unlike many other states? If this field is also crucial to national security, how will America fare, especially given that 43 other countries are also building, buying, and using military robotics, including allies like the UK and Germany, but also states like Russia, China, and Iran? Can we stay ahead, or will we fall behind like so many other historic first-movers in technologic revolutions?

We may need to think even more broadly about this. In which direction does the state of the American manufacturing economy, as well as the state of science and mathematics education in our schools, have us headed? What does it mean for US security that the number of American students graduating each year with a degree in IT or engineering is slightly less than in 1986, but we have had a more than 500% rise in "parks, recreation, leisure and fitness studies"? What does it mean to have soldiers whose hardware increasingly says "Made in China" on the back and whose software increasingly is being written by someone in places like India?

7) What does the "Open Source" revolution hold for us?

Robotics are not like aircraft carriers or nuclear bombs; much of the technology is off-the shelf, and even do-it-yourself. Hitler's *Luftwaffe* may not have been able to fly across the Atlantic during World War II, but a 77 year old blind man has already done so with his own homemade drone. This technology will inevitably pass into the wrong hands, allowing small groups and even individuals to wield great power. Hezbollah flew four such weapons in its war with Israel.

As the 9-11 Commission warned, the tragedy that day was in part cause by a "failure of imagination." Can we apply the same lesson here? Can we develop a military and homeland-security strategy that considers not only how to use technology but how others will use it against us? That means widening the threat scenarios our agencies plan and train for, and the potential equipment they might need for a new range of defense. It also means new legal regimes to determine who should have access to such dangerous technologies—lest our best new weapon come back to bite us.

There are two summary points I would like to make about these questions.

The first is that within many of them we find the policy answers. That is, we may debate the specifics of the answer, but almost all extend from a gap of some sort in policy, as the technology races ahead of our institutions. The second is that these are all the sort of questions that used to be debated at science fiction conventions. But much like past technologies as the atomic bomb or the horseless carriage that were once just imaginary, they are now all too real. And thus they are crucial for serious people to engage upon.

Thank you very much for the opportunity to be part of this discussion today.