Thinking Ahead

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Opinion

The 3rd offset-finding those combinations of breakthrough technologies and operating concepts that keeps us ahead of our adversaries-is a central focus of the Secretary of Defense Ashton Carter and Deputy Secretary of Defense Robert Work (with due credit to former Secretary of Defense Chuck Hagel's 2014 Defense Innovation Initiative). Like the first two offsets (simply put, nuclear weapons and precision guided munitions/GPS), this next offset will need to be truly transformational strategically, operationally, and monetarily (a true force multiplier).

Like most large bureaucracies, the national security establishment will have many opponents to any proposed changes to business as usual. A new direction is certain to threaten existing vested interests and the sense of comfortableness with the way things are. At a minimum the resistance is about money and profit, a level of complacency and commitment to the status quo, and general apprehension toward difference, the unknown and the untried. Cultural change requires sensitivity to tradition, patience, and a nurturing touch.

That said, it is essential that we pursue those at disruptive technologies and operating concepts that are true game changers, to ensure that we can indeed fight and win the next war-in whatever shape and size it comes in. Our adversaries are doing the same, and we want to maintain that qualitative advantage.

Autonomous systems and artificial intelligence (cognitive computing and the unleashing of quantum computing) are deserving of major R & D investment as candidate components of the 3rd offset. We are rapidly transcending the world in which human beings assigned robots and machine the dull, dirty, and dangerous missions and emphasized their brute force of computing power. In its place are new divisions of labor (and responsibility?) that involve considerations of man-machine interface, collaboration, and trust as machines add more human like functions to their repertoire of capabilities.

Perhaps best revealed in gaming (think IBM's Deep Blue supercomputer beating world champion Gary Kasparov in chess in 1997 to Google's Deep Mind AlphaGo now challenging the best of the best in the ancient Chinese board game Go,) AI (and associated super intelligence) may be nearing a threshold. Some, such as Nick Bostrom of the Future of Humanity Institute, argue we are approaching that tipping point soon, maybe within the next 5-10 years. Bob Work thinks we have already arrived at an inflection point.

Others think it is much further in the future, if it will ever occur. Equally important, there is an on-going debate beyond inevitability. It is about good and evil. Stephen Hawking, Bill Gates and Elon Musk all have offered dire warnings that the developments of increasingly smarter machines could exceed human intelligence, turn against humankind, and mark the end of the human race. Those discussions, including human seats in the "kill chain," increasingly capture the interests of real world strategists, policymakers, scientists, philosophers, moralists and ethicists, and legalists as well as Hollywood producers and directors and science fiction writers. What captures our imaginations and concerns is the potential for AI based learning machines ultimately to operate independently from and in contradiction to the directions of tis human "masters." This combined with potential for autonomous systems or remotely operated systems being "cyber high jacked' or otherwise commandeered strongly suggests that we must confront these challenges-NOW.

The defense innovation unit experimental (DIUx) in Mountain view, California, is a good first step to ensure that this conversation embraces the private sector. It is well-positioned in Silicon Valley to leverage a cluster of private sector innovation companies and thinkers. Moreover, it speaks to the necessity in a democracy to maximize open and transparent conversations about the way ahead in realizing DOD's vision of a fully integrated manned and unmanned force-a trusted partnership of collaborating teams between and among machines and men. Only in that way can we develop and continually evolve the policy, legal, budgetary, and ethical frameworks necessary to deter and if necessary defeat our adversaries and together with the rest of the world manage the potential existential threat posed by machines gone wild-no longer "human friendly."