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Related Categories: Cybersecurity and Cyberwarfare; Democracy and Governance; Energy Security; Missile Defense; Science and Technology; China

BRACING FOR FULLY AUTOMATED CYBERWARFARE
Artificial intelligence may fully supplant human warriors on the cyber battlefield within the next decade, a number of leading experts have noted. At a recent House Armed Services Committee hearing, one witness, Jason Healey, a Senior Fellow at the Atlantic Council's Cyber Statecraft Initiative, warned lawmakers that artificial intelligence may soon drive and direct offensive cyber systems - a development that would represent a growing threat to the integrity of critical infrastructure, which is managed by the private sector and companies that not be able to commit resources to counter the increased sophistication of AI-driven cyber. (*The Hill*, March 1, 2017)

MANUFACTURING BATTLEFIELD WEAPONS
The U.S. Army is now testing the grenade launcher of the future. The recently unveiled Rapid Additively Manufactured Ballistics Ordnance grenade launcher, or R.A.M.B.O., is designed based on the M203 grenade launcher. But, unlike other weapons, the R.A.M.B.O. and its grenade ammunition are both made almost entirely using 3-D printed parts (aside from springs and fasteners). Crafted from 50 different components, R.A.M.B.O. was created in 75 hours using a process called direct metal laser sintering, which is the process of melting layers of fine metal powder together to form a cohesive, finished product.

The launcher proved successful in testing with minimal degradation, giving Army officials hope that this technology will allow for a revolution in the military's acquisition and testing of new weapons. If ultimately successful, this technology would allow the military to field new weapons as a much faster rate, and allow soldiers to fabricate their weapons and replacement parts onsite. (*Popular Mechanics*, March 9, 2017)

MINIATURIZED WEAPONS POSE NEW THREATS
Nanotechnology has many potential applications that could significantly benefit humanity, particularly in the health sector. However, the technology carries with it some alarming security related applications as well. In his new book, *Nanoweapons: A Growing Threat To Humanity*, physicist Louis del Monte warns of the implications for nanotechnology in the field of intelligence gathering and military affairs. Nanoweapons coupled with miniature drone devices are now being considered for a wide array of military applications, he notes. These include autonomous entry into buildings to conduct surveillance, use as delivery vehicles for biological warfare agents or poisons, or even as mechanisms to perform targeted assassinations through the clandestine delivery of a toxin. (*CNBC*, March 17, 2017)

CHINA TAKES STRIDES TOWARD MICROWAVE WEAPONS
Reports from China indicate that the People's Liberation Army may have made significant progress toward the development of a high-powered microwave (HPM) weapon. The maturity of Chinese HPM technology is as yet unknown, but recent reports suggest that the Chinese researchers have made major leaps forward in developing "disruptive technology" that utilizes the directed energy of microwaves. The implications are significant; if deployed, an HPM weapon would pose threats to anti-ship missiles, satellites, and air defenses, thereby helping the PRC to increase the effectiveness of its anti-access/area denial (A2/AD) strategy. (*The Diplomat*, March 11, 2017)

UPGRADING THE HUMAN MIND TO COMBAT AI
Respected intellectuals Stephen Hawking, Elon Musk, and Bill Gates have all expressed grave concerns about the potential dangers of artificial intelligence (AI), but none have actively worked to guard against a future AI system that is potentially hostile to humans - until now. The newest brainchild of Musk, named Neuralink, is a brand-new company designed to further advancements in computers that can interface with the human brain. The central purpose of the company, according to Musk, is to develop devices that can be implanted into the brain with the eventual goal of boosting human memory and the ability to think faster, and better keep pace with advancements in AI.

So far, electrode arrays and small implants have been used medically, to reduce the effects of neurodegenerative brain diseases such as Parkinson's and Alzheimer's. But more in-depth device integration with the human brain is still a long way off. However, when technically feasible, brain implants that can augment the mental capacity and speed of humans could be used to increase the performance of soldiers in the U.S. military, a concept that is also under development by the Pentagon - albeit not for the express purpose of combating AI. (*The Verge*, March 27, 2017)

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