2022

Reflections on Reading

The U.S. Naval War College

REFLECTIONS ON READING

DRONES AT WAR IN 2022 . . . AND BEYOND

Professor John E. Jackson of the Naval War College is the Program Manager for the Chief of Naval Operations Professional Reading Program.

One of the primary missions of the Chief of Naval Operations Professional Reading Program (CNO-PRP) is to provide sailors with access to books that can help answer questions that arise from observing the military activities of our allies and our potential adversaries. As this article goes to press, a high-tempo and technologically sophisticated war is taking place in Ukraine. A great deal of news coverage has focused on the use of drones and so-called smart weapons. The current CNO-PRP features several books that explain some of the design considerations, performance characteristics, and moral issues of their use. The featured books include the following:

One Nation, under Drones: Legality, Morality, and Utility of Unmanned Combat Systems. This is an interesting and informative review of how robotic and unmanned systems are impacting every aspect of American life, from how we fight our wars, to how we play, to how we grow our food. Edited by John E. Jackson, this highly readable book features chapters from a dozen experts, researchers, and operators of the sophisticated systems that have become ubiquitous across the nation and around the world. Press reports have focused primarily on unmanned aerial vehicles, officially designated as UAVs but more often referred to as *drones.* This work takes you behind the scenes and describes how Predators, Reapers, Scan Eagles, and dozens of other pilotless aircraft have been used to fight the global war on terrorism. Although these systems seemed to emerge fully developed into the skies above America's distant battlefields following the attacks of September 11, 2001, readers will discover that they actually trace their lineage to World War I, when the "automatic airplane / aerial torpedo" designed and built by the Sperry Gyroscope Company made its first flight just over a century

ago. Unmanned aircraft were used by various combatants during World War II and took many forms, from converted manned bombers to intercontinental attacks on the American homeland by rice-paper balloon bombs. Technology developed in the latter decades of the twentieth century enabled crews stationed thousands of miles away to attack targets on remote battlefields. Such long-range and remote-controlled weapons have been used extensively but are controversial from both legal and ethical standpoints. Chapters written by international law specialists and drone pilots with advanced education in ethics address these issues from both sides of the argument. The book also details how robotic systems are being used on land, on and below the seas, and in civilian applications such as driverless cars. Three dozen photographs display drones as small as an insect up to those as large as a 737 airliner. *One Nation, under Drones* covers such a wide array of topics that it will be of interest to everyone from the casual reader seeking to know more about these systems to national-security professionals, both in and out of uniform, who will be making decisions about their procurement and use in decades to come.

Army of None: Autonomous Weapons and the Future of War. In this work, Paul Scharre, a Pentagon defense expert and former U.S. Army Ranger, explores what it would mean to give machines authority over the ultimate decision of life or death. Scharre's far-ranging investigation examines the emergence of autonomous weapons, the movement to ban them, and the legal and ethical issues surrounding their use. He spotlights artificial intelligence in military technology, spanning decades of innovation from German noise-seeking Wren torpedoes in World War II—antecedents of today's homing missiles—to autonomous cyber weapons, submarine-hunting robot ships, and robot tank armies. Through interviews with defense experts, ethicists, psychologists, and activists, Scharre surveys what challenges might face "centaur warfighters" on future battlefields, which will combine human and machine cognition. We have made tremendous technological progress in the past few decades, but we also have glimpsed the terrifying mishaps that can result from complex automated systems—such as when advanced F-22 fighter jets experienced a computer meltdown the first time they flew over the international date line. At least thirty countries already have defensive autonomous weapons that operate under human supervision. Around the globe, militaries are racing to build robotic weapons with increasing autonomy. The ethical questions within this book grow more pressing each day. To what extent should such technologies be advanced? And if responsible democracies ban them, would that stop rogue regimes from taking advantage? At the forefront of a game-changing debate, *Army of None* engages military history, global policy, and cutting-edge science to argue that we must embrace technology where it can

make war more precise and humane, but without surrendering human judgment. When the choice is life or death, there is no replacement for the human heart.

Genius Weapons: Artificial Intelligence, Autonomous Weaponry, and the Future of Warfare. Author Louis A. Del Monte describes the ever-increasing role of artificial intelligence in weapons development, the ethical dilemmas these weapons pose, and the potential threat to humanity. Artificial intelligence is playing an ever-increasing role in military weapon systems. Going beyond the bomb-carrying drones used in the Afghan war, the Pentagon is now in a race with China and Russia to develop what are called "lethal autonomous weapon systems." In this eye-opening overview, Del Monte, a physicist, technology expert, and former Honeywell executive, examines the advantages and the potential threats to humanity resulting from the deployment of completely autonomous weapon systems. Stressing the likelihood that these weapons will be available in the coming decades, the author raises key questions about how the world will be impacted. Although using robotic systems might lessen military casualties in a conflict, one major concern is whether we should allow machines to make life-and-death decisions in battle.

All sailors are encouraged to read books such as the ones discussed above to help them develop a better understanding of the issues behind the headlines. They also can refer to the *Department of the Navy Unmanned Campaign Framework* (March 2021). The Chief of Naval Operations, Admiral Michael M. Gilday, recently stated that the U.S. Navy needs a fleet of five hundred ships, of which up to 150 could be unmanned.

The conclusion of *One Nation, under Drones* states, "Our hope is that this [unmanned] future world will be more peaceful, but if that is not the case, robotic and unmanned weapons will be used to fight more efficiently, more humanely, and with greater precision."

JOHN E. JACKSON

(Note: The book descriptions presented in this article have been adapted from those on Amazon.com.)