SCHAR SCHOOL OF POLICY AND GOVERNMENT

Center for Security Policy Studies

at George Mason University

Fourth Annual Symposium on International Security

"Technology and the Future of Warfare"

September 24, 2021

Panel 3: "Organization: Investing in People and Institutions"

Innovation in the Military: An Historical Perspective – Michael Hunzeker, GMU

Dr. Michael Hunzeker is an assistant professor of political science at George Mason University's Schar School of Policy and Government, as well as the associate director of the Center for Security Policy Studies. His research focuses on wartime learning and military innovation. He received a PhD from Princeton University and served in the U.S. Marine Corps from 2000-2006.

Ethical Issues – Cortney Weinbaum, RAND Corporation

Cortney Weinbaum is a senior management scientist at the RAND Corporation. Her research has focused on the impact of emerging technologies on intelligence, countering weapons of mass destruction, special operations, and space architecture She began her career as an intelligence officer, where she led two teams that received the Director of National Intelligence's Meritorious Unit Citation.

Institutional Challenges within DOD and the Inter-Agency – Dan Gerstein, RAND Corporation

Dr. Daniel Gerstein is a senior policy researcher at the RAND Corporation. He previously served as undersecretary (acting) and deputy undersecretary in the Department of Homeland Security Science and Technology Directorate. He served in the U.S. Army and received a PhD from George Mason University.

Moderator: Ben Fernandes, GMU

Leading the discussion, **Professor Michael Hunzeker** spoke on his recent publication Dying to Learn: Wartime Lessons from the Western Front. Victory or defeat does not turn on the ability to see revolutionary potential in revolutionary technology. Rather, it is our adaptive learning capabilities we need to prepare. World War I provides a good example of wartime learning we can learn from today, considering this conflict occurred within a multipolar system, followed a prolonged period of peace, and followed a period of rapid exogenous technological change.

Further, three fundamental lessons can be derived: there is a best way to organize fighting forces to learn as quickly as possible, we need to review our existing analytical mechanisms, and we shouldn't be too complacent in trust in frontline commanders - we need the ability to let adaptations occur on battlefields.

Cortney Weinbaum presented on her work on Artificial Intelligence and how to develop a policy framework to address the ethical challenges that are emerging. She described the ten general principles that underline ethical considerations for new scientific research and innovation: *beneficence, informed consent, non-exploitation, privacy and confidentiality, non-discrimination, conflict of interest, professional competence, integrity, professional discipline, and duty to society*.

Not every principle applies to every field of research.The final principle, duty to society, poses the question: is the subject of research something that should exist in society? Weinbaum went on to note that codes of conduct formulated around these principles are generally considered "soft law".

Weinbaum presented a potential pyramid framework for an AI code of conduct regarding the military use of AI. At the base of this framework was the business functions and foundational layer, which would focus on guidelines for identifying, removing, and mitigating bias in operational use of AI. The next level, non-lethal military uses of AI, would provide guidelines for tradecraft transparency, human-in-the-loop versus human-on-the-loop, and audits for accuracy. The top level, lethal uses of AI, would include an oversight body, mechanisms for lethal activities, and measures of effectiveness for non-kinetic strikes.

Daniel Gerstein focused on how the Department of Defense institutions need to do some fresh thinking about technology development. The industrial age research enterprise is failing in creating 21st century enterprises. The US will need to reexamine/revamp innovation systems to remain competitive globally, and new approaches are required.

Over sixty years have passed since the last major redesign of the US science and technology enterprise. Further, U.S. research and development expenditure ratio to GDP has gone from 12% in the 1960's to less than 3% 2019.

Gerstein concluded that traditional approaches to technology development from the last century continue to dominate in the defense establishment. His recommendations to benefit technology development and innovation included:

- streamlining the current research and development enterprise;
- recognizing the DoD's reliance on academia, industry, and allies;
- avoiding the *Henry Ford Problem* (not sure asking operator is as important as showing the scientist and engineer);
- thinking orthogonally to identify innovative solutions.

Kimberly Talley, CSPS Student Fellow, MA candidate in International Security