Since assuming my position as Naval War College (NWC) President last July, I have identified four broad elements of a vision under which the institution will Operationalize, Navalize, Futurize, and Internationalize its education and research efforts, with an overall goal of contributing to the professionalism and capabilities of the nation's future leaders. Previously, I addressed aspects of the vision's operationalization component in the Naval War College Review's Winter 2017 issue and navalization in the Spring 2017 issue. In this issue, I will outline the actions we are taking on futurization.

**Core Course Modifications**

NWC efforts at futurization include an ongoing reassessment of how to prepare students for the strategic environment that the Chief of Naval Operations (CNO) articulated in his January 2016 “Design for Maintaining Maritime Superiority,” with its emphasis on contestation of the maritime system, the rising influence of the global information system, and the increasing rate of technological change. Our goal is to produce graduates able to succeed in the dynamic and dangerous strategic environment of today and tomorrow.

With regard to the information domain, the College has greatly expanded the cyber content in its curriculum. It also has coordinated with the Naval Postgraduate School on a core cyber curriculum, with overlap in four content areas: cyber concepts; international cyber law, ethics, and standards; military cyber operations; and cyber policy and strategy. To augment the NWC joint professional military education curriculum, a series of classified and unclassified sessions on cyber and emerging technologies offered at the commencement of each academic year will prepare students better for engaging with the challenges of cyber and emerging technologies during their research and studies.
Certificate in Ethics and Emerging Military Technology

The College’s new certificate in ethics and emerging military technology (EEMT) seeks to deepen our students’ understanding of the ethical complexities that new technology imposes. The certificate option was launched in the fall of 2016 as a specialized version of our popular electives program. We anticipate that the first six certificates will be awarded in June 2017.

EEMT students enroll in a trio of relevant ethics and technology courses; complete one additional course (beyond the normal three-course electives sequence); and write an original, comprehensive, faculty-mentored research paper. They earn four additional graduate credits and recognition as certificate recipients in studies highly relevant to the Navy and the nation. Participation in this first-ever NWC certificate program is voluntary, goes beyond the level of effort required for the master of arts degree, and is limited to a small number of highly motivated students.

Certificate candidates will examine the ethical and military relevance of emerging technologies such as artificial intelligence, genetic manipulation, neuro-enhancements, cyber, cryptology, nano-engineering, 3D printing, robotics, and unmanned systems (air, surface, and maritime). They will apply ethical reasoning to the challenges and consequences of rapid technological change in the modern security environment. The courses and research they complete will help them formulate original perspectives on many potential technologies and their ethical implications for the profession of arms.

Center for Naval Warfare Studies Initiatives

Our Center for Naval Warfare Studies is directly supporting the Assessment Division of the CNO staff as they consider different variations of future fleet architectures following work done by the Navy Staff, the MITRE Corporation, and the Center for Strategic and Budgetary Assessments. Several faculty members are continuing to support the CNO staff in studying other future fleet architecture work, looking at the 2030 and 2045 time frames. The center’s talented researchers also continue to support future thinking and analysis through work with the College’s Center for Cyber Conflict Studies (known as C3S) and the Stockton Center for the Study of International Law’s work in the area of cyber conflict.

In March 2017, the College sponsored a workshop entitled “Military Innovation and the New Presidential Administration: Lessons from the Past, Solutions for the Future.” This event focused on the notion that, regardless of what national security strategy the Trump administration ultimately pursues, maintaining the U.S. military’s qualitative edge will give his administration and those of his successors greater degrees of freedom in responding to long-term security challenges.
and short-term crises. Given the range of American security responsibilities and the dictates of geography, the belief is that the United States must out-innovate its rivals or it will be unable to accomplish American security objectives in the long term. The workshop also examined the successes and failures of the Defense Department’s widely reported “Third Offset Strategy” to help chart a proposed course for the new administration. It focused on practical, policy-oriented issues useful for planning how to maintain the technological advantages of the U.S. military far into the future. The moderators, panelists, and postworkshop analysts emphasized implications for USN future strategy, policy, operations, concepts, and technologies.

**Institute for Future Warfare Studies**

In February 2017, we opened the Institute for Future Warfare Studies (IFWS) as a new research and study department aimed at understanding how armed conflict may evolve in the future and how the U.S. Navy can prepare for it better. The mission of the new institute is to serve as a cross functional focal point for the College as we carry out the mission of helping to define the future Navy and its associated roles and missions.

Anticipating future security challenges is critical to national security, and navies are expensive and take many years to build. That’s why we have to look out a long way to figure out what platforms, weapons, and capabilities the Navy is likely to need in the decades ahead. IFWS will be taking a long-range look at the warfare needs of the country. This longer time horizon is what differentiates our new institute from other external organizations that are looking at these issues; while many other forward-looking groups tend to view the next three to five years as the future, IFWS will be looking out thirty years or more from today.

The institute’s location within the College allows the impressive academic horsepower housed in Newport to assist IFWS in carrying out its mission. We believe that this institute will become yet another vital service we provide to Navy decision makers and stakeholders. We are excited about the research findings that this group—working with partners in government, academia, and industry—will provide to NWC, the Office of the CNO, and the fleet.

**Future Forces Gallery**

For the past eight years, the faculty moderators of the Unmanned Systems and Conflict in the 21st Century elective have sponsored multiple “futurization” events each academic year, focusing on emerging technology related to unmanned and robotic systems. These occasional events have brought manufacturers, designers, and government scientists and engineers to campus to provide informational displays and demonstrations on cutting-edge technologies.
Such events now are being presented in the College’s newly opened Learning Commons. To maintain a more persistent “future focus” throughout the year, we recently established a permanent “Future Forces Gallery” that features graphics, models, and large, flat-screen monitors to display new systems and concepts as they are designed, tested, and deployed throughout the services. A trio of “Future Navy” images by award-winning science-fiction artist John Berkey are featured prominently in the gallery, and rotating exhibits will ensure that future platforms, weapons systems, and exotic hardware are kept at the forefront of the minds of our students, faculty members, and visitors.

Some wise sage once said, “The future is closer than you think.” I agree, and we want to ensure that our students and our fleet customers not only learn from the lessons of history but consider them in the context of many possible futures.

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