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Torpedo: Inventing the Military-Industrial Complex in the United States and Great Britain

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operations and battles are graphic and bring a reality not seen very often.

A longtime resident of southern Africa, Emerson is a renowned scholar of African affairs, having served as Chair of Security Studies at the U.S. National Defense University’s Africa Center for Strategic Studies, and as head of the Africa regional studies program at the U.S. Naval War College. His knowledge and experience make *The Battle for Mozambique: The Frelimo-Renamo Struggle, 1977–1992* a must-read for anyone seeking to understand the history and challenges of the African continent.

ROGER H. DUCEY

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Kate Epstein’s book about the relationships between the torpedo and the creation of the military-industrial complex builds on her earlier work about naval tactics, in particular her essay in the April 2013 *Journal of Military History* about “torpedoes and U.S. Navy battle tactics” before World War I. (See Katherine C. Epstein, “No One Can Afford to Say ‘Damn the Torpedoes’: Battle Tactics and U.S. Naval History before World War I,” *Journal of Military History* 7, no. 2 [April 2013], pp. 491–520.) Here she goes after much bigger “fish”—excuse the pun. Epstein wastes no time in getting to her primary thesis in this fascinating monograph about the development of the torpedo as a weapon system in the United States and Great Britain. She begins boldly: “Thus, in addition to the part they played in the origins of the military-industrial complex, torpedoes were at the nexus of the international arms race, globalization, and industrialization after World War I.” Epstein takes the reader on a journey back in time to relate a story little told and even less known.

The modern self-propelled torpedo, invented and improved in the last half of the nineteenth century by the Englishman Robert Whitehead, was naval warfare’s first “fire and forget” weapon. Like breech-loading rifles and artillery, also products of the nineteenth century, it changed the landscape of war in its environment—the maritime domain. Just as breech-loading rifles increased the lethality and scope of land warfare, so too did the torpedo, but on unimaginable scales in a very short time period. As Epstein notes in her introduction, “Over a fifty-year period the speed of torpedoes had increased by roughly 800 percent, and their range by 5,000 percent. They were the cutting edge of technology.” When combined with other so-called disruptive technologies, like the airplane and the submarine—that is, technologies so unique that they break sociopolitical, commercial, and military paradigms—they had the potential to and, in fact, did throw existing notions of sea power, naval tactics, and even maritime strategy into question. It was no accident that the great maritime strategists—A. T. Mahan and Sir Julian Corbett—emerged during the period of the torpedo’s rise to prominence as sailors recast their thinking about naval tactics in the modern age in part because of cutting-edge technology.

Epstein builds on the work of historian William McNeill and his arguments about the emergence of “command technology” in the nineteenth century,
which she defines as “technology commanded by the public sector from the private sector that was so sophisticated and expensive that neither possessed the resources to develop it alone.” Because the public sector could not deliver expensive new technology on its own, it “had to invest in [research and development] by the private sector.” Her larger argument about the emergence of military-industrial complexes in the United States and Britain hinges on this relationship, and torpedoes represented what one might call an agency technology, providing a forcing function for public and private sectors to overcome the difficulties in solving complex military problems—problems that could only be solved in partnership. Throughout the book Epstein emphasizes, constantly, the contingent nature of these developing relationships—that the actors did not conform to some script. They simply wanted to solve difficult, complex problems, and their decisions shaped how the military-industrial complexes and both countries developed as a result.

In her closing Epstein makes conclusions that get to the heart of today’s discussions about American decline, technological challenges, and innovation and that may seem counterintuitive—even in light of the challenge of China and antiaccess and area denial (A2/AD) strategies. These may be of some comfort to the pessimists out there who claim America is in an irreversible decline. The British had a larger research and development infrastructure in both public and private sectors precisely because they were the naval hegemon of that era. Even though many of their decisions vis-à-vis technology seemed more cautious than those made by American naval officers—who were somewhat credulous in embracing new technological ideas—the British came out ahead in developing better torpedoes in the long run. It also seems counterintuitive that the British would do better than the weaker Americans in developing a weapon that threatened Britain’s naval hegemony, but that is precisely what happened. The British did better in developing the “weapon of the weak” than the relatively weak Americans, who would have seemed to have had more interest in such weapons. The British went further, realizing savings in the long run as they envisioned a future without battleships, using flotillas of torpedo craft and battle cruisers to protect their interests. This future essentially came to fruition during and after World War II as the new battle cruiser—designed to patrol the global commons and protect British maritime interests—evolved into the aircraft carrier. As for torpedo flotillas, what emerged during the Cold War were submarine and antisubmarine fleets of very large size both to dispute and to protect those same sea lines should all-out war break out.

The one critique this reviewer has of the book involves the impact of the Russo-Japanese War on torpedo development during the period covered by this book. Japan’s opening torpedo attack on the Russian fleet in 1904 at Port Arthur was not exactly a “coming-out party” for the weapon system: 85 percent of the Japanese torpedoes missed their targets. Perhaps the Americans and British thought they had solved the clear problems that torpedoes presented in their design and use, but a mention of this key episode in the development of the torpedo—a flop on opening night if you will—would seem merited. Nonetheless, Epstein’s book goes places and discovers truths that few other books on naval history have. Although it is not
an easy read, the arguments it makes are of vital interest to naval strategists, innovators, and those interested in the complex relationships and processes that are now part and parcel of the national defense paradigm.

JOHN T. KUEHN

Friedman, B. A., ed. 21st Century Ellis: Operational Art and Strategic Prophecy for the Modern Era. Annapolis, Md.: Naval Institute Press, 2014. 150pp. $21

21st Century Ellis is a solid contribution to the Naval Institute’s 21st Century Foundations series and the scholarship regarding the touted U.S. Marine Corps visionary Lieutenant Colonel Earl “Pete” Ellis. The strength of this volume lies in the compilation of most of Ellis’s scholarly works. B. A. Friedman has assembled five articles written by Ellis in the decade between 1911 and 1921 (a total of about 110 pages) into four chapters. Ellis’s text is supplemented by Friedman’s introduction and additional commentary highlighting the value of Ellis to both his contemporaries and current executors of the operational art. Friedman arranges the essays by subject rather than chronologically. This allows the reading of the book by section without any loss of flow or context. Chapter 2, the shortest, reviews Ellis’s First World War experience in France on the staff of John A. Lejeune. Chapter 3 is substantially longer but unlike the preceding chapter is perhaps of more applicability to modern practitioners. Two lectures prepared by Ellis during his tenure as a faculty member at the U.S. Naval War College examined the challenges of fighting a naval campaign in the western Pacific. Composed in 1911–12, these proved prescient in their assessment of the tension building between Pacific naval powers and the war they would fight after Ellis’s death. There is great legitimacy to the editor’s claim that “Ellis predicted war with Japan in 1912.”

Chapter 1 may be most relevant to Marines of this century. Ellis draws from his substantial experience fighting counterinsurgency in the Philippines during the early years of last century. His seventeen-page article “Bush Brigades” provides a solid foundation for any twenty-first-century warrior preparing for service in Iraq or Afghanistan. The editor summarizes how Ellis’s tenets are strongly reflected in the Marine Corps’s Small Wars Manual as well as today’s counterinsurgency doctrine, while lamenting the “ill use of many of these tenets” in more-modern conflicts. A current practitioner would benefit by paying attention to Ellis’s words.

The final chapter built around Ellis’s work, chapter 4, is the longest and the major impetus behind Friedman’s effort. Ellis is frequently viewed by Marines as the man who laid the template for modern amphibious operations. Read in detail, Ellis’s article “Advanced Base Operations in Micronesia” reinforces that view. Ellis systematically takes a reader through the requirements for an advance across the Pacific to be successful. Many of these tenets informed Marine Corps development prior to the U.S. entry into the Second World War, laying the groundwork for highly successful amphibious operations in both the Pacific and European theaters.

While successful in providing a new generation of military practitioners easy access to Ellis’s work, 21st Century Ellis could have more successfully achieved