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Technological Change and the United States Navy, 1865–1945

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failure of the Wehrmacht to prepare logistics support suited to the resulting depth of the theater.

If the book has a fault, it lies in the numerous maps and organizational charts that accompany the text. Though House's prose is clear and straightforward, the maps do not help the layman really grasp the dynamics of the battles. Similarly, although House thoughtfully includes a key to the numerous symbols that soldiers use to depict units on maps and tables of organization, he leaves out a number of the more esoteric ones that inhabit the book. This is a minor irritant—in general the book is well supported by a glossary of technical terms and acronyms, liberal annotations, and an extensive bibliography—but it should be fixed in the next edition if the book is to be considered a true introductory text.

House has a clear thesis that permeates his analysis: combined-arms structure (comprising tanks, artillery, infantry, helicopters, engineers, etc.) should be integrated at the lowest practicable level and balanced to provide the most flexibility to the commander. (In practice, this seems to occur only at the division or sometimes the brigade level.) The commander can then select various types of units to form combined-arms task forces that can address the type of operations planned. House's discussion of the long and painful history of armies' struggles to achieve this balance and flexibility brings to mind the equally painful attempts at jointness among services.

House inevitably addresses the issue of air support as a piece of the combined-arms puzzle. He analytically describes the objections airmen have to integrating airpower into a combined-arms ground organization, but in his conclusions he argues against separate, air-only

campaigns. Although his points are otherwise well made, on this issue he seems to overreach a bit.

In summary, Jonathan House has produced a useful and readable text for anyone who wants a better understanding of how modern armies fight.

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McBride, William M. *Technological Change and the United States Navy, 1865–1945.* Baltimore, Md.: Johns Hopkins Univ. Press, 2000. 352pp. $45

This is not a technological history of the U.S. Navy per se but rather an exploration of how the dominant culture of the Navy's leadership drove specific technological choices in the transition from the sailing ship of the line to the battleship and then to the aircraft carrier. McBride's thesis centers on two points: that the organization and culture of the U.S. Navy have traditionally been defined by its capital ships; and that new technologies challenging the relevance of the current capital ship are generally resisted by senior leaders, who seek both to maintain control over change and to inhibit any developments that suggest a transfer of power to individuals with the skills, functions, and organizational relationships of a new "technological paradigm."

These themes are familiar to those who follow the academic literature on technology and culture, but McBride is undoubtedly correct in his contention that there is no widespread understanding of the specific impact of the dominant service culture on technology selection. A thorough appreciation of the full range of forces that drive technological choices would appear to be particularly

important in the post–Cold War era, in which the technological options are so numerous and specific requirements for the Navy are so uncertain.

One of McBride's major goals in this work is to refute the idea of technological determinism and demonstrate instead the importance of culture in technological innovation. He explores in some depth the intense professional competition between the Navy's line officers and engineers during the transition from sail to steam, and between surface officers and aviators in the transition from the battleship to the carrier. He also offers interesting historical insight into internal competition for control over the design details of capital ships during different eras, with an informative analysis of the role of naval-industrial relations in the early debate over the adoption of turbo-electric drive.

Unfortunately, McBride's argument against technological determinism tends to the opposite extreme, ascribing almost every technological choice to single-minded efforts by the Navy's leaders to maintain the social and cultural status quo. He characterizes the battleship "paradigm" at the end of the nineteenth century as a "pre-Copernican Ptolemaic cosmogony," as if the battleship were not only the wrong technological choice but somehow a violation of natural law. He castigates the U.S. Navy for rejecting a cruiser-centric commerce-raiding strategy and attributes the choice to blind adherence to the "paramount status" of the battleship. Yet ultimately McBride does not refute the case that the transition from the sailing ship of the line to the battleship was essentially a deterministic outcome, nor does he objectively evaluate the failed efforts by others in the

nineteenth century (most notably the French) to render the battleship obsolete.

In contrast, McBride largely admits that the adoption of the aircraft carrier was more a matter of fortuitous events than of technological determinism. As he points out, a narrow difference in timing in the appearance of radar and the proximity fuse might have doomed the aircraft carrier to irrelevance; it was not until well into World War II that a carrier could muster sufficient striking power to hold a combat-ready battleship at risk. Yet he condemns the Navy's "battleship thought collective" as early as World War I for failing to move rapidly to a sea-based air strike force—including early adoption of torpedo bombers (which actually took another twenty-five years to achieve technological maturity). There have unquestionably been Luddites in the Navy's senior ranks throughout its history, but there is great cost and risk in abandoning major military systems that have proven their worth. McBride is far too prone to condemn the technological caution of past decision makers, who lacked the benefit of our hindsight.

It is not clear whom the book was meant to inform. McBride's insistence on turgid academic jargon like "intra-artifact combat" and "obdurate boundary artifact" to express fairly simple ideas suggests that he did not intend this work for the reader inside the military who might actually make the best use of it. On the other hand, an academic audience unfamiliar with naval operations might accept without question McBride's somewhat preposterous assertions that the "blip enhance" mode of the ULQ-6 was intended as a suicide device, that an "old World War II–era destroyer" could sink a nuclear-powered aircraft carrier, or that

the cruise missile has long since replaced the aircraft as the primary means of strike from the sea.

This volume does add some historical substance to the important topic of military innovation, but the prospective reader should be cautioned that it is neither a well balanced nor a comprehensive account of the impact of technological change on the U.S. Navy from the Civil War through World War II.

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Key, David M., Jr., *Admiral Jerauld Wright: Warrior among Diplomats.* Manhattan, Kans.: Sunflower Univ. Press, 2001. 438pp. $22.95

For more than two-thirds of a century, a host of diplomats, military officers, and statesmen have been entertained in their wardrooms, clubs, and drawing rooms from London to Manila by Jerry Wright's stories and vignettes drawn from his remarkable career. After every session, the inevitable reaction would be, "Jerry, you've got to write a book."

Now that book has been written by David M. Key, Jr., a nephew of the admiral. Key, making good use of his Harvard A.B. in English, does an excellent job in letting his uncle and his contemporaries tell the story, while himself providing the historical context, one that is unusually rich in drama and import. Fortunately, Key had much to draw on, and he has done a thorough and discriminating job in his research. Wright wrote copiously—leaving journals, memos, articles, and letters—all flavored with the special brand of low-key, wry wit that was characteristic of him. Wright had plenty to write about. His career was replete with

one-of-a-kind assignments, from being in charge of President Calvin Coolidge's yacht to commanding a British submarine in World War II (though he was neither British nor a submarine officer).

Born in 1898 into an Army family, Wright adored his father, and clearly the feeling was mutual. "Pop" took his son on hunting and fishing trips around the world, and the young boy relished the experience. When Wright was only thirteen, then-Major William Wright, stationed in Luzon as commander of the Philippine Scouts, took the youngster, armed with his own shotgun, on a military expedition to Mindanao to suppress an uprising by the rebellious Moros, Philippine Muslims. It was an adventure from America's brief colonial period, more Kipling than Hemingway.

In 1914 Wright entered the Naval Academy (at sixteen) because there was no appointment available at West Point. He graduated in only three years, because of World War I. He was sent to Europe on blockade duty, which also provided the opportunity to visit his father, now Major General Wright, commanding the 89th Infantry Division on the Western Front. However, the trip became more than just a visit with "Pop" at his tented headquarters when Ensign Wright was caught in a German artillery barrage.

It did not take the young naval officer long to realize that the U.S. Navy was the right place for him. He derived personal as well as professional satisfaction from his assignment as naval aide to Coolidge and from his subsequent deployment to the China Station as executive officer of a four-pipe destroyer.

Wright remained a bachelor as a junior officer, but with his special charm and tall good looks, he was much in demand