

Naval War College Review

Volume 74
Number 4 *Autumn 2021*

Article 1

2021

Autumn 2021 Full Issue

The U.S. Naval War College

Follow this and additional works at: <https://digital-commons.usnwc.edu/nwc-review>

Recommended Citation

Naval War College, The U.S. (2021) "Autumn 2021 Full Issue," *Naval War College Review*: Vol. 74 : No. 4 , Article 1.

Available at: <https://digital-commons.usnwc.edu/nwc-review/vol74/iss4/1>

This Full Issue is brought to you for free and open access by the Journals at U.S. Naval War College Digital Commons. It has been accepted for inclusion in Naval War College Review by an authorized editor of U.S. Naval War College Digital Commons. For more information, please contact repository.inquiries@usnwc.edu.

NAVAL WAR COLLEGE REVIEW

Autumn 2021

Volume 74, Number 4



Cover

The cover image shows USN aircraft carriers under way in the Indian Ocean in 1980. Front to back are USS Kitty Hawk (CV 63), USS Midway (CV 41), and the nuclear-powered USS Nimitz (CVN 68), in company with escort ships. In "Aircraft Carriers: Missions, Survivability, Size, Cost, Numbers," former Navy Secretary John F. Lehman and Steven Wills make a case that Midway—whose career stretched from 1945 to 1991—still represents a viable, and in many ways a superior, model for producing multiple carriers that should be added to the Nimitz and Ford mix to perform the crucial missions and functions of which aircraft carriers alone are capable.

Source: Courtesy of Naval History and Heritage Command

NAVAL WAR COLLEGE REVIEW



Autumn 2021

Volume 74, Number 4



NAVAL WAR COLLEGE PRESS
686 Cushing Road
Newport, RI 02841-1207

NAVAL WAR COLLEGE PRESS ADVISORY BOARD

Seth Cropsey
Amb. Paula J. Dobriansky
Jeffrey E. Kline
Capt. Robert C. Rubel, USN (Ret.)
Geoffrey Till
Francis J. West
Dov S. Zakheim

NAVAL WAR COLLEGE REVIEW EDITORIAL BOARD

Douglas A. Chamberlain
Yvonne Chiu
Peter J. Dombrowski
Andrew S. Erickson
Stephen F. Knott
Cdr. James Kraska, USN (Ret.)
Capt. Richard A. LaBranche, USN (Ret.)
Capt. Thomas E. Mangold, USN (Ret.)
Col. Mackubin T. Owens, USMC (Ret.)
Pauline M. Shanks Kaurin
Capt. Peter M. Swartz, USN (Ret.)
Capt. Sam J. Tangredi, USN (Ret.)
Cdr. Matthew A. Tattar, USNR
Scott C. Truver
James J. Wirtz

PRESIDENT, NAVAL WAR COLLEGE

Rear Adm. Shoshana S. Chatfield, USN

PROVOST

Dr. James E. Hickey

INTERIM DEAN OF NAVAL WARFARE STUDIES

Peter A. Dutton

NAVAL WAR COLLEGE PRESS

Carnes Lord, *Editor*

Robert Ayer, *Managing Editor*

Steven P. Stashwick, *Associate Editor for Content*

Kate Acosta, *Associate Editor for Books*

Kaila Aguiar, *Associate Editor for Review*

Timothy J. Demy and Brad Carter, *Book Review Editors*

Lori A. Almeida, *Administrative Assistant and Circulation Manager*

Naval War College Review

Code 32, Naval War College

686 Cushing Rd., Newport, RI 02841-1207

Fax: 401-841-1071

DSN exchange, all lines: 841

Website: www.usnwc.edu/Publications/

Naval-War-College-Press

<http://twitter.com/NavalWarCollege>

Editor, Circulation, or Business

401-841-2236

press@usnwc.edu

Managing Editor

401-841-4552

managingeditor@usnwc.edu

Book Reviews

bookreviews@usnwc.edu

Other Naval War College Offices

401-841-3089



The *Naval War College Review* was established in 1948 as a forum for discussion of public policy matters of interest to the maritime services. The thoughts and opinions expressed in this publication are those of the authors and are not necessarily those of the U.S. government, the U.S. Navy Department, or the Naval War College.

The journal is published quarterly. Distribution is limited generally to commands and activities of the U.S. Navy, Marine Corps, and Coast Guard; regular and reserve officers of U.S. services; foreign officers and civilians having a present or previous affiliation with the Naval War College; selected U.S. government officials and agencies; and selected U.S. and international libraries, research centers, publications, and educational institutions.

Contributors

Please request the standard contributors' guidance from the managing editor or access it online before submitting manuscripts. The *Naval War College Review* neither offers nor makes compensation for articles or book reviews, and it assumes no responsibility for the return of manuscripts, although every effort is made to return those not accepted. In submitting work, the sender warrants that it is original, that it is the sender's property, and that neither it nor a similar work by the sender has been accepted or is under consideration elsewhere.

Permissions

Reproduction and reprinting are subject to the Copyright Act of 1976 and applicable treaties of the United States. To obtain permission to reproduce material bearing a copyright notice, or to reproduce any material for commercial purposes, contact the editor for each use. Material not bearing a copyright notice may be freely reproduced for academic or other noncommercial use; however, it is requested that the author and *Naval War College Review* be credited and that the editor be informed.

Periodicals postage paid at Newport, RI. POSTMASTERS, send address changes to: *Naval War College Review*, Code 32S, Naval War College, 686 Cushing Rd., Newport, RI 02841-1207.

ISSN 0028-1484



CONTENTS

From the Editors	5
-------------------------------	---

President's Forum	9
--------------------------------	---

The Future Navy

Aircraft Carriers

Missions, Survivability, Size, Cost, Numbers	15
--	----

John F. Lehman, with Steven Wills

A new, twenty-first-century design of the size of USS *Midway* with an air wing up to sixty-five aircraft, whether conventionally or nuclear powered, could complement larger nuclear flattops while still incorporating rugged survivability and being capable of independent operations—and could be built quicker and cheaper and in more shipyards.

Sizing the Carriers

A Brief History of Alternatives	37
---------------------------------------	----

Sam J. Tangredi

In the end, the debate over aircraft carriers always boils down to cost; their acquisition costs are much higher than for any other single-item defense program, making them a natural target for criticism. Combined with a simplistic perception of vulnerability, high costs tend to cause critics to declare aircraft carriers unaffordable—but “compared to what?”

Allied Navies

Seoul's Misguided Desire for a Nuclear Submarine	53
---	----

James Campbell

Rather than waste its money on nuclear submarines that would provide only a single-dimensional response, South Korea should lock down a superior ASW suite by combining new technologies with existing ROKN platforms to provide multiple mission capabilities for less money, including support by existing maintenance infrastructure.

Maritime Strategy

Jomini and Naval Special Operations Forces

An Applied-Competition Approach to Russia	79
---	----

Kevin D. Stringer

A version of Jomini's campaigning theory, in combination with maritime special-operations capabilities, offers a convincing maritime approach for contesting Russia's malign activity in Europe while remaining below the level of armed conflict and supporting a broader conventional effort to prepare a war-fighting environment by using irregular warfare to secure advantages prior to conflicts.

The Limits of Sea Power95

Jakub J. Grygiel

Sea powers have many handicaps that often are forgotten, resulting in a dangerous overestimation of their safety, influence, and staying power in a competitive world. A more clear-eyed assessment of sea power—one less enamored of the grandeur associated with naval might—reveals that often their hopes were unwarranted and ended up having tragic results.

Naval History

“To Die Gallantly”?

The Role of the Surface Fleet in German Naval Strategy, 1919–41.....111

Peter Hooker

While the U-boat dominated Germany’s naval war from 1942 on, its surface fleet played a far more significant strategic role to that point than is appreciated. The construction of that fleet was not the result of myopia but of considered appraisals of the German navy’s performance in the First World War and the development of naval technology during the interwar period.

Letter from Port Moresby.....131

John D. Moore

Review Essays

The Swartz Festschrift141

Conceptualizing Maritime & Naval Strategy: Festschrift for Captain Peter

M. Swartz, United States Navy (Ret.), ed. Sebastian Bruns and Sarandis Papadopoulos

reviewed by Robert C. Rubel

Adaptation and the School of War145

Mars Adapting: Military Change during War, by Frank G. Hoffman

reviewed by John T. Kuehn

Book Reviews

Navies in Multipolar Worlds: From the Age of Sail to the Present,

ed. Paul Kennedy and Evan Wilson

reviewed by Benjamin Armstrong.....149

<i>Vision or Mirage: Saudi Arabia at the Crossroads</i> , by David Rundell reviewed by John W. Strain	151
<i>Escaping the Conflict Trap: Toward Ending Civil Wars in the Middle East</i> , ed. Paul Salem and Ross Harrison reviewed by Kurt Buckendorf.	152
<i>The Kaiser's U-boat Assault on America: Germany's Great War Gamble in the First World War</i> , by Hans Joachim Koerver reviewed by Timothy J. Demy.	154
<i>The American Way of Empire: How America Won a World—but Lost Her Way</i> , by James Kurth reviewed by Jeffrey P. Rogg	155
<i>Oilcraft: The Myths of Scarcity and Security that Haunt U.S. Energy Policy</i> , by Robert Vitalis reviewed by Tristan Abbey	157
<i>A Brief Guide to Maritime Strategy</i> , by James R. Holmes reviewed by Scott Cauble.	158
<i>Coalition of the UnWilling and UnAble: European Realignment and the Future of American Geopolitics</i> , by John R. Deni reviewed by Ryan C. Hendrickson.	160
<i>Dangerous Narratives: Warfare, Strategy, Statecraft</i> , ed. Ajit K. Maan reviewed by Nick Omichinski.	161
<i>Something of Themselves: Kipling, Kingsley, Conan Doyle and the Anglo-Boer War</i> , by Sarah LeFanu reviewed by Richard Norton.	163
<i>2030: How Today's Biggest Trends Will Collide and Reshape the Future of Everything</i> , by Mauro F. Guillén reviewed by Gerald J. Krieger.	165
Reflections on Reading	169

FROM THE EDITORS

The future of the aircraft carrier in the evolving security environment has been a perennial topic of debate within and beyond the U.S. Navy. At a time of continuing uncertainty regarding the Navy's future force structure, this very much remains the case. Unfortunately, this debate often fails to transcend familiar talking points. John F. Lehman Jr., in "Aircraft Carriers: Missions, Survivability, Size, Cost, Numbers," provides an informed and succinct overview of this subject, focusing particularly on the fraught issue of carrier vulnerability and the argument for resuscitating a *Midway*-class medium carrier. John F. Lehman Jr. is a former Secretary of the Navy.

This year is the hundredth anniversary of the Washington Naval Conference of 1921. As Sam J. Tangredi points out in "Sizing the Carriers: A Brief History of Alternatives," it is more than a little ironic that it was an arms-control agreement that provided the impetus for the construction of America's largest warships. He goes on to survey the history of the prewar experimentation with various carrier concepts, and then the World War II experience, with its rapid creation of quick-to-build smaller carriers (CVLs and CVEs) for limited missions such as antisubmarine warfare. While after the war interest continued in small carriers equipped with V/STOL aircraft, he concludes that the case for reliance on large (CV or "fleet") carriers remains persuasive. Sam J. Tangredi holds the Leidos Chair of Future Warfare Studies at the Naval War College.

One of the most important naval developments in recent years is the so-called AUKUS agreement among Australia, the United Kingdom, and the United States, designed to improve collaboration on a range of cutting-edge military technologies. The centerpiece of this new alignment will be the acquisition of nuclear submarine-propulsion technology by the Australians. A predictable effect of this development is that other countries in the region may take a second look at moving to nuclear propulsion in their own submarine fleets. In fact, a debate on this subject has been ongoing for some years in the Republic of Korea. In "Seoul's Misguided Desire for a Nuclear Submarine," James Campbell takes a close look at the many obstacles to be overcome by the South Koreans or any other nation in pursuing this option. He argues that Seoul would be better advised to invest the enormous anticipated costs of such a program in alternative ASW capabilities,

including additional modern diesel submarines. James Campbell is a production manager at the U.S. Naval Sea Systems Command.

In “Jomini and Naval Special Operations Forces: An Applied-Competition Approach to Russia,” Kevin Stringer appeals to the authority of the distinctly nonnaval nineteenth-century strategist Antoine-Henri Jomini to make a provocative case for a new approach to deterring and countering Russian pressures against NATO Europe in the so-called gray zone of subviolent conflict—and as a preparation for potential escalation of this conflict. The approach focuses on what would seem to be a novel role for naval special operations forces. Colonel Kevin D. Stringer, USA, currently serves on the faculty of the U.S. Army War College.

All navalist writing is vulnerable to the fallacy that maritime power is the royal road to geopolitical success. In “The Limits of Sea Power,” Jakub Grygiel makes a wide-ranging argument cautioning against this fallacy and also suggesting ways in which the limits he describes at least can be mitigated. Jakob Grygiel is a professor of politics at the Catholic University of America.

The relative military value of, as well as the relationship between, surface and subsurface naval forces remains a fundamental issue for modern navies. Regarding the two world wars of the last century, the conventional wisdom seems to accept that the U-boat threat was the potentially decisive element of German sea power, yet one to which the Germans themselves failed to give adequate priority in their overall strategic planning for the employment of naval forces. In “‘To Die Gallantly’: The Role of the Surface Fleet in German Naval Strategy, 1919–41,” Peter Hooker challenges this view. Emphasizing that Germany’s naval leadership well understood the limitations of U-boat technology and armament and rightly judged that the submarine force by itself could win neither war, he argues that the navy’s commitment to rebuilding a serious surface fleet in the run-up to World War II was sensible in itself and that the resultant fleet in fact proved a much more significant threat to British maritime dominance in the first years of the war than generally is believed. Peter Hooker is a PhD candidate at the University of Newcastle, Australia.

With John D. Moore’s “Letter from Port Moresby,” we revive a onetime feature of this journal and invite similar contributions from others in the future. This piece is particularly timely in light of the recently announced AUKUS agreement, mentioned above. It is rather remarkable that so little attention is paid regularly to Papua New Guinea, located on an island that is one of the largest and perhaps the most interesting in the world, in both human and environmental terms, not to mention that it provided the stage for General Douglas MacArthur’s virtuoso performance in his “island-hopping” campaign of the Pacific War. Noteworthy are Moore’s brief discussion of U.S.-Australian interest in developing military facilities on Manus Island and his flagging of Chinese attempts at political-economic penetration of the country.



Rear Admiral Shoshana Chatfield is the fifty-seventh President of the U.S. Naval War College and a career naval helicopter pilot. A native of Garden Grove, California, she graduated from Boston University in 1987 with a bachelor of arts in international relations and French language and literature. She received her commission through the Naval Reserve Officers Training Corps in 1988 and earned her wings of gold in 1989. Chatfield was awarded the Navy's Political/Military Scholarship and attended the Kennedy School of Government, receiving a master in public administration from Harvard University in 1997. In 2009, the University of San Diego conferred on her a doctorate of education in leadership studies.

PRESIDENT'S FORUM



AS WE HAVE DISCUSSED in previous issues of the *Naval War College Review*, the College's efforts to mitigate the impact of the worldwide COVID-19 pandemic resulted in significant modifications to College procedures during the latter half of academic year 2019–20 and all of academic year 2020–21. By embracing alternative teaching methodologies and using virtual and hybrid learning technologies, the College continued to carry out its assigned missions in a manner that was both safe and effective. The implementation of College-wide in-person and teleworking initiatives protected the health of the College community during this unprecedented period. We are happy to note that educational outcomes, as measured by course-completion and graduation rates, met or exceeded prepandemic levels.

During the lengthy pandemic lockdown period, the College's senior leaders conducted an intensive analysis of all aspects of the College's operations to identify gaps, challenges, and future opportunities. The recently published *2022–2027 Strategic Plan* represents the culmination of these analyses, and it serves as a way ahead as the College anticipates a return to normal public-health conditions for the 2021–22 academic year and beyond. The full text of the plan can be found on our website at www.usnwc.edu, but I'd like to share with you now its broad outlines.

The plan begins by identifying the College's overall vision, documenting our assigned missions, and specifying the primary lines of effort that will be used to achieve the goals and outcomes we seek. It also delineates the College's values and identifies a series of operational objectives to be pursued. By design, this plan is not prescriptive, but rather is meant to chart a course toward the end points we see as vital to the Navy, the Department of Defense, and the security and prosperity of the United States of America and its allies.

Our Guiding Vision: We inform today's decision makers and educate tomorrow's leaders.

We provide today's decision makers and tomorrow's leaders with educational experiences and learning opportunities that develop their ability to anticipate and prepare strategically for the future, strengthen the foundations of peace, and create a decisive war-fighting advantage.

Our Mission: We deliver excellence in education, research, and outreach.

In today's dynamic security environment, even if numerical and technological superiority could be achieved, it would not be enough to ensure victory over the array of potential adversaries. Our national-security leaders also must possess the mental strength and flexibility to outthink our competitors in all domains of engagement. At the Naval War College, we expand the intellectual engagement of naval, joint, interagency, and international leaders and warriors to achieve that cognitive advantage. We value the broad and relevant experience of our faculty and staff and are committed to investing in the professional development of all members of our diverse team. We embrace innovative education-delivery methods. We are responsive to the support needs of our students, faculty, and staff and the requirement for sustaining and investing in our infrastructure. In our historic facilities in Newport, Rhode Island, and in numerous locations around the globe, we deliver excellence in education, research, and outreach and are committed to building enduring relationships with our alumni, partners, and stakeholders.

Our Values: In implementing the strategic plan, the Naval War College team pursues a series of operational objectives and conducts day-to-day activities that are consistent with the following values:

- We embrace diversity, inclusiveness, and open communication to foster a creative, collaborative, and high-performing team that treats all people with professionalism, dignity, and respect.
- Our respect for the expansive range of ideas, experiences, and scholarship within our community underpins our commitment to academic freedom.
- We are agile, responsive, and innovative in addressing emergent issues and changes in tasking and the external operating environment.
- We are committed to continually measuring and improving the quality of service provided to our stakeholders.

The Lines of Effort We Will Pursue: The Naval War College creates an enduring strategic advantage by excelling in the execution of educational, research-and-analysis, and outreach initiatives. We do so by performing the following:

- Delivering an *education* that integrates rigorous and relevant curricula and world-class research and analysis. Our in-residence and distance-learning

modes align with our students' learning requirements and their full-time or part-time availability to engage in scholarly pursuits. We expand our students' capacity for strategically minded critical thinking, ethical decision-making, and creative problem solving.

- Engaging in cutting-edge *research* and analysis of concepts, plans, and mature and emerging technologies. Our data-driven approach to developing, testing, and validating concepts strengthens cognitive power in the face of uncertainty and complexity. Our interdisciplinary environment attracts scholars and experts from across the military, the rest of government, academia, and private industry, and promotes original and applied research for scholarly publication, policy and doctrine review, and advancement of knowledge in the profession of arms.
- Conducting *outreach* and engaging with naval, joint, interagency, and international alumni, partners, and stakeholders to incorporate diverse perspectives, foster a network of enduring partners, build partner capability and capacity, and enhance interoperability.

The impetus for all we do is derived from the five mission areas the Chief of Naval Operations has assigned to the Naval War College. These are as follows:

- Educate and develop leaders
- Support defining the future Navy and associated roles and missions
- Support the Navy in an era of great-power competition
- Strengthen global maritime partnerships
- Promote ethical leadership across the force

The College will accomplish these missions by achieving a series of mutually reinforcing objectives that involve *refining* the services and products we currently provide, *innovating* new services or products, and *enabling* increased organizational performance by enhancing internal functions and business processes. Specific responsibilities, metrics, targets, and milestones will be published separately in an *NWC Strategy Implementation Framework* document. Using this iterative framework, we will assess progress toward achievement of each operational objective on a quarterly basis. We believe that successful implementation of this strategic plan requires achieving specific, measurable, relevant, and time-bound results. I will update you periodically on our progress toward achieving each objective.

All of us should remember the advice of noted author, educator, and management consultant Peter Drucker, who notes, "Plans are only good intentions unless they immediately degenerate into hard work." I am confident that all of us at the Naval War College are ready to commence the hard work necessary to translate intentions into accomplishments.

This strategy was developed during the COVID pandemic and is being published as many members of our campus community are returning to regular classroom and office work after more than a year of disruption. Plans made in fiscal year 2020 (FY20) were overtaken by the COVID response. FY21 was a transitional year, with remarkable outcomes across our three lines of effort as our proficiency and productivity peaked in the virtual realm. As we exit the COVID environment, we take on the difficult work of *rebuilding* routines, *refining* practices that worked for us in the past, and *innovating* around new ideas and opportunities exposed through our experimentation with new technologies and changes in the global security environment.

We are called to consider the implications of great-power competition as we approach our important work with a sense of urgency. We face FY22 and beyond with optimism and renewed commitment to our values and mission. It is an honor to serve with each and every member of this vibrant Naval War College community, which carries such a deep legacy of service to our Navy and our nation.

A handwritten signature in black ink, reading "Shoshana S. Chatfield". The signature is stylized with a large, looped "S" and "C".

SHOSHANA S. CHATFIELD

Rear Admiral, U.S. Navy

President, U.S. Naval War College

John F. Lehman was Secretary of the Navy in the Reagan administration and a member of the 9/11 Commission. His latest book is Oceans Ventured: Winning the Cold War at Sea (2018).

Steven Wills is a research analyst at the Center for Naval Analyses. His latest book is Strategy Shelved: The Collapse of Cold War Naval Strategic Planning (2021).

Naval War College Review, Autumn 2021, Vol. 74, No. 4

AIRCRAFT CARRIERS

Missions, Survivability, Size, Cost, Numbers

John F. Lehman, with Steven Wills

The aircraft carrier, as employed by the United States and other nations, has been controversial since its operational introduction just over a century ago, with the commissioning of HMS *Argus* into the Royal Navy on 16 September 1918.¹ At that time and ever since, the carrier has faced intense criticism from rival services and political opponents. The arguments have not changed in that whole time. Critics believe carriers to be too expensive and too vulnerable. These arguments are raised anew in times of peace—then in every war the carrier’s decisive use in combat ends the discussion for the next decade or so.

In 1949, the Truman administration ordered the decommissioning of all but seven of the Navy’s carriers and the dismantling of the first supercarrier, USS *United States*, then under construction. The outraged Secretary of the Navy (SECNAV), John L. Sullivan, who was not even consulted, resigned immediately in protest.² In what followed, known as the “Revolt of the Admirals,” many admirals and captains lobbied and testified against the administration, and many were fired as a result. Led by the future Chief of Naval Operations (CNO) Admiral Arleigh A. Burke, the Navy fought against efforts by Secretary of Defense (SECDEF) Louis A. Johnson and Air Force Secretary W. Stuart Symington to go even further: giving the Air Force all Navy and Marine aviation. Burke survived an attempt to retire him as a captain, but the Navy’s future carrier programs seemed at best to be navigating in shoal water at the end of the 1940s.³

However, the Navy’s flattops soon got a chance to prove their worth in the emerging Cold War world. Secretary of State Dean G. Acheson provided to Congress a survey of vital American interests in the Pacific that excluded Korea. That exclusion, combined with the dramatic disarmament of the U.S. Navy, provided

an irresistible temptation to the Soviet Union and China, and on 25 June 1950 North Korea attacked South Korea. That, of course, brought about a sudden and complete end to the Truman administration's naval disarmament. Since the invasion captured all air force bases in South Korea, carrier-based aviation, in the form of strike groups from USS *Valley Forge* (CV 45) and its Royal Navy counterpart in the western Pacific, HMS *Triumph*, went into action against North Korean forces on 3 July 1950—providing the only available tactical air support to the fight. Eighty-six U.S. and forty British carrier aircraft provided the primary air component of United Nations forces opposing the North Korean offensive. Carriers quickly proved their worth, and—with no more than four fleet carriers ever deployed to Korea—the Navy flew 276,000 combat sorties (only seven thousand short of its total for World War II) and dropped 177,000 tons of bombs (74,000 tons more than the service had dropped in all of World War II) during the conflict.⁴

President Harry S. Truman sent an emergency bill to Congress trebling the defense budget and canceling the retirement of aircraft carriers, and a few months later he fired Johnson as SECDEF. The House Armed Services Committee and its chairman, Representative Carl Vinson (D-GA), hailed the value of carrier aviation, and the first supercarrier, USS *Forrestal* (CV 59), was authorized in July 1951.⁵ The dramatic role that carrier air played in Korea ended criticism of flat-tops for the next twenty years.

President Truman and his successors often had occasion to utter the words “Where is the nearest carrier?” I myself first heard the question—more like a demand—from President Richard M. Nixon on 15 April 1969, when I worked for Henry A. Kissinger, then the assistant to the president for national security affairs (i.e., national security advisor).⁶ That day North Korea shot down a Navy EC-121 reconnaissance plane over international waters, killing thirty-one sailors.⁷ There was no carrier in the theater, and we did nothing.

The election of Jimmy Carter to the U.S. presidency in 1976 started a new carrier battle less than two years later—with the same, now sixty-year-old, arguments. President Carter, a former submariner, was opposed to building any more fleet carriers, and he intended to phase them out of the naval order of battle. Congress, however, added another two-billion-dollar *Nimitz*-class carrier to the president's 1978 budget. In an unprecedented move, Carter vetoed the fiscal year 1979 (FY-79) defense bill because it included the carrier. However, the Soviet invasion of Afghanistan and the Iranian takeover of the U.S. embassy soon after settled the issue. With the effort augmented by the presence in the Navy Senate office of Captain (and future U.S. senator) John S. McCain III, the fourth *Nimitz* carrier was authorized by Congress and signed into law by President Carter.⁸

It was not long after the passage of this legislation that I, as the new SECNAV, had the keen pleasure of naming that carrier USS *Theodore Roosevelt* (CVN 71). The contract also became the first that I signed under the new, competitive, fixed-price-procurement philosophy of the Reagan administration. (*Roosevelt* came in early and under budget.)⁹

THE REAGAN ADMINISTRATION: HIGH-WATER MARK OF THE CARRIER FORCE

The U.S. Navy reached a high point of fifteen carriers and 594 total ships in 1987, a growth of 74 ships from the end of the Carter administration owing to the 600-Ship Navy initiative spearheaded by President Ronald W. Reagan. Two-carrier block buys—a process in which multiple ships of a single class are purchased in one year, yielding significant cost savings—were executed in the FY-83 and FY-88 budgets.¹⁰ This feat had not been accomplished with fleet carriers since the Second World War. The development of the six-hundred-ship force came directly from the specific requirements to carry out the new Forward Maritime Strategy—the ultimate realization of the Reagan administration's determination to achieve unquestioned command of the seas.¹¹

The Navy lost no time in carrying out the new strategy. Seven months after Reagan's inauguration, eighty-three ships, including four carriers (two supercarriers, one vertical and/or short takeoff and landing [i.e., V/STOL] carrier, and one helicopter carrier), hidden by sophisticated cover-and-deception technology, raced north into the Norwegian Sea. The first the Soviets knew they were there was when USS *Dwight D. Eisenhower* (CVN 69) sent four F-14s, four A-6s, and four KA-6 tankers one thousand miles to fly at 550 knots through a Soviet exercise thirteen miles off Murmansk.¹² The Soviets were flabbergasted and never really recovered their previous confidence in their ability to defend their homeland from U.S. naval attack.

Every year thereafter, U.S.-led allied fleets carried out realistic training exercises in those seas—seas where they would fight if the Soviets attacked. Each exercise refined and improved tactics that incorporated the newest technology. By 1985, the carriers were operating in Norwegian fjords and among Norwegian Sea archipelagoes, making enemy targeting next to impossible.¹³

Soviet chief of the General Staff Marshal Sergey F. Akhromeyev visited the United States in July 1988 as part of Soviet leader Mikhail S. Gorbachev's desire to reduce tensions with the West. Akhromeyev flew out to the carrier *Theodore Roosevelt* and observed a demonstration of the carrier air wing's capabilities. During the visit, Akhromeyev presented a global map to U.S. Chairman of the Joint Chiefs of Staff Admiral William J. Crowe Jr. that incorporated symbols detailing a ring of American naval bases and deployed submarines and aircraft

carriers surrounding the Eurasian continent, and specifically the Soviet homeland. Akhromeyev told Crowe, “Your navy and bases surround my country and threaten the security of the Soviet Union.”¹⁴ The union of the Forward Maritime Strategy and the six-hundred-ship Navy was the core of the Reagan administration’s military and naval rearmament plans that were crucial to deterrence—and ultimately to victory in the Cold War.

The Soviet Navy and Air Force came to realize that they could not cope. In 1986, the Soviet General Staff sent a *démarche* to the Politburo, urgently request-

Critics believe carriers to be too expensive and too vulnerable . . . in times of peace—then in every war the carrier’s decisive use in combat ends the discussion for the next decade or so.

ing a tripling of the budgets for the Northern Fleet and Northern Air Force; otherwise, they believed that in the event of war they could not defend the country’s northern

flank for more than a week. This hit the Politburo like a thunderclap and was a major factor contributing to the Soviet collapse.¹⁵

As occurred after previous conflicts, Cold War victory brought an overreaction in disarmament. The fleet was reduced by one-third, with the number of carriers cut from fifteen to twelve.¹⁶

CARRIERS: MISSIONS AND COSTS

To build the force of fifteen carriers in the ’80s, we froze the design of the *Nimitz* class and built five more of them on fixed-price contracts that varied only in the steady introduction of ever-improving weapons technology.¹⁷ However, passage of the Goldwater-Nichols reforms in 1986 took decisions on new weapons away from the services, transferring them to the significantly enlarged Department of Defense (DoD) bureaucracy.¹⁸ Under this new joint system, it was decided that the Navy should have a new carrier design.¹⁹

Given the *Ford*’s exorbitant and still-growing price tag, many have advocated a return to smaller carriers. We will examine such options later in this article.

The new administration of President Donald J. Trump called for an increase in the fleet to 355 ships, including twelve aircraft carriers. The FY-17 budget specifically required the Navy to maintain at least eleven aircraft carriers and nine carrier air wings, and the same legislation endorsed the 355-ship, twelve-carrier goals.²⁰

Yet challenges to these goals have continued. There was a dip to ten carriers in December 2012 when *Enterprise* was retired, and, surprisingly, the Trump Defense Department requested only five new combatant ships and two tugboats in the FY-21 budget.²¹ Presidents now often must be disappointed when in a crisis they ask, “Where are the carriers?”

CARRIER STATISTICS SINCE 1942

Ship Class	Year Commissioned	Displacement Tonnage (initial)	Length (feet)	Beam (feet)	Crew Size (including air wing)	Cost When Purchased (2019 dollars)
<i>Essex</i>	1942	27,100	872	147	3,170	\$68–\$78 million (\$1 billion)
<i>Midway</i>	1945	45,000	968	136	3,960	\$85.6 million in 1945 (\$1.2 billion)
<i>Forrestal</i>	1955	60,000	1,039	252	4,100	\$217 million in 1952 (\$3.13 billion)
<i>Kitty Hawk</i>	1961	64,000	1,072	252	4,600	\$400 million in 1961 (\$3.4 billion)
<i>Enterprise</i>	1961	75,000	1,125	252	4,600	\$451 million in 1960 (\$4.11 billion)
<i>Nimitz</i>	1973	80,753	1,092	252	5,244	\$1 billion in 1975 (\$5 billion)
<i>Theodore Roosevelt</i>	1986	80,753	1,092	252	6,275	\$1.9 billion in 1988 (\$5.6 billion)
<i>America</i> LHA	2014	44,971	844	108	1,200	\$3.4 billion in 2014 dollars
<i>Ford</i>	2017	100,000	1,106	256	4,660	\$13.3 billion in 2017 (still rising)

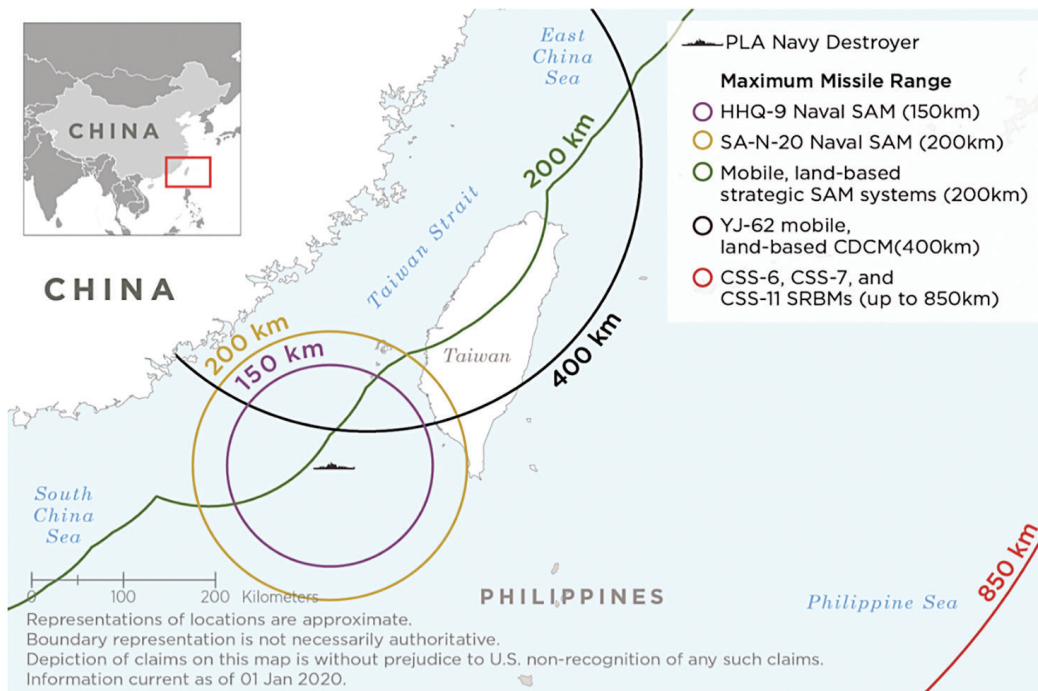
Sources: Lehman, *Aircraft Carriers: The Real Choices*, p. 8; Eric Wertheim, *The Naval Institute Guide to Combat Fleets of the World: Their Ships, Aircraft, and Systems*, 16th–19th eds. (Annapolis, MD: Naval Institute Press, 2013–); Norman Polmar, *Aircraft Carriers: A History of Carrier Aviation and Its Influence on World Events*, vol. 2, 1946–2006, 2nd ed. (Washington, DC: Potomac Books, 2008).

The F-18Es and the F-35s are all effective fleet-air-defense fighters. The continuously upgraded Aegis anti-air system is now the standard for USN cruisers and destroyers (and soon for the FFG-62 frigate) that serve as the carrier's partners in providing air superiority. While these surface combatants are highly effective in shooting down enemy aircraft and ballistic, supersonic, and hypersonic missiles, they and the Army transports, tankers, merchant ships, and amphibious-warfare vessels they escort cannot survive for long without air cover; they must have fighter cover twenty-four hours a day. The majority of the earth's surface is out of range for land-based fighters, so they cannot provide the around-the-clock coverage needed. Only carrier air wings can provide that capability.

As was the case in the 1970s and '80s with the rise of the Soviet Navy, there is no lack of operational-level-of-war missions for the individual carrier strike group and the multiflattertop carrier battle force in the new age of great-power competition. The emergence of a Chinese carrier force—now consisting of three vessels, with the potential for up to six by the 2030s—suggests the potential for carrier duels in blue water that may be reminiscent of the great Pacific War of the 1940s.²²

MAXIMUM MISSILE RANGES IN THE TAIWAN STRAIT

Taiwan Strait



Source: U.S. Defense Dept., *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2018* (Washington, DC: Office of the Secretary of Defense, 2018).

Like during the Cold War under the 1980s Maritime Strategy, the carrier's first mission might be warfare at sea against enemy surface, subsurface, and aviation units. For example, attriting Chinese surface and air forces could enhance the implementation of *guerre de course* (targeting Chinese global commerce) and could include sea-based aviation strikes against Chinese infrastructure and ports, mining of ports and sea-lanes, and the closing of straits to Chinese merchant and naval shipping. Carrier-based aviation enforcing blockades likely would serve as the backbone of global horizontal-escalation operations against overseas Chinese military and commercial installations. Such a capability greatly strengthens deterrence, as University of Pennsylvania scholar Fiona Cunningham suggests: "[A] blockade would cripple China's economy, deny its leaders access to key resources needed to fight the war, and ultimately compel its leaders to negotiate an end to the conflict. Like deep strikes on the Chinese mainland, the prospect of a blockade could deter China from starting a conflict."²³

The Russian Federation Navy represents a mere shadow of the former Soviet fleet, but it possesses modern submarines and missiles that can threaten Western targets afloat and ashore.²⁴ What is similar to the Cold War situation is that the Russian General Staff greatly fears the power of a U.S. "aerospace blitzkrieg," led

in large part by carrier-based aircraft and their weapons.²⁵ Russia's strategic geography is even worse than that of its Soviet predecessor state. Russian naval forces remain divided by vast geographic distances, often spanning areas that are devoid of useful land bases for aircraft, yet much of Russia's long-range response to sea-based aviation is dependent on land-based systems and relies on significant aerospace control that might not be possible in the presence of U.S. carriers.²⁶ U.S. naval carrier-based aviation is very useful in bridging and controlling such distances, and it would contribute the largest part of any aerospace campaign against the Russian Northern and Pacific Fleets.

The continuing acquisition of carriers by China—and by Australia, France, Italy, Japan, the United Kingdom, and now South Korea—demonstrates that the flattop remains a vital component of diplomacy, power projection ashore, and operational warfare at sea.²⁷

AIRCRAFT CARRIER SURVIVABILITY

While all surface vessels are susceptible to attack, the vulnerability of the carrier to multiple new weapons—including the hypersonic cruise missile, the antiship ballistic missile, and an arsenal of other arms that includes submarine torpedoes, mines, and drones—again is at the center of the debate on the large carrier's continued viability.

Yet consider the examples of carrier survivability provided below.

World War II—Era Kamikaze Attacks

In an unexpected attack by a Japanese kamikaze (i.e., suicide-attack) plane on 30 October 1944, USS *Franklin* (CV 13) was hit with a 550-pound bomb. It penetrated the ship's unarmored flight deck and exploded, igniting dozens of other weapons on the aircraft parked on the ship's hangar deck.²⁸ Less than six months later, on 19 March 1945, *Franklin* was hit again, this time by two five-hundred-pound bombs from Japanese attackers. *Franklin* suffered almost eight hundred dead out of 2,600 personnel aboard at the time of the attack.²⁹ The *Franklin* battle-damage report later stated, "The conflagration in *Franklin* resulting from the action of 19 March was the most severe survived by any U.S. warship during the course of World War II. It is pertinent, however, to point out that the resulting damage would not in itself have caused the loss of the ship since the principal strength structure, watertight integrity and vital machinery below the hangar deck remained intact."³⁰

The official USN damage report highlights the robust design and survivability of the large flattop in action. The report does acknowledge that the "major damage sustained in each of the actions of 30 October 1944 and 19 March 1945 demonstrates the effectiveness of bomb hits when received by aircraft carriers during the extremely vulnerable period just prior to and during periods of launching

strikes.” However, the *Franklin* report then goes on to state, “The latter two cases of damage to *Franklin* illustrate thoroughly the ability of modern U.S. aircraft carriers to survive extensive damage from plane crashes, fire, and heavy bombs.” Large carriers can survive heavy damage and remain afloat, if not operational. When *Franklin*’s fires finally were brought under control, the ship resumed steaming under its own power.³¹ The damage to *Franklin* was important, in that it helped set new design parameters for post–World War II flattops (beginning with USS *Midway* [CV 41]) that emphasized armor and other forms of improved protection for the carrier.³²

During the Okinawa campaign, the Japanese launched an estimated 1,900 kamikaze sorties against the Allied fleet.³³ Of the 793 kamikazes that

Army transports, tankers, merchant ships, and amphibious-warfare vessels . . . cannot survive for long without air cover. . . . The majority of the earth’s surface is out of range for land-based fighters, so [o]nly carrier air wings can provide that capability.

actually found targets, 181 hit ships and another ninety-five crashed close enough to cause damage. Most of these aircraft were very agile fighters using very effective tactics, often making them superior in performance to modern anti-

ship missiles. During 1945, six large carriers were hit by these kamikazes, and another six by bombers using kamikaze tactics. None of the ships were sunk or damaged beyond repair.³⁴

Vietnam-Era Accidents: Oriskany, Forrestal, and Enterprise

The lessons learned from *Franklin* and other World War II carriers influenced the design of subsequent Cold War flattops, with positive results. Three cases in particular emphasize the survivability of the big carrier across the Cold War.

USS *Oriskany* (CV 34), USS *Forrestal* (CV 59), and USS *Enterprise* (CVN 65) all experienced exploding bombs and severe fires that killed many sailors. Yet all returned to port for repairs under their own power. *Enterprise* later was assessed to have survived the equivalent of six heavyweight Soviet cruise-missile strikes in the course of its accident, but could have resumed air operations in several hours had repair capacity not been immediately available.³⁵

USS America Testing

The former *Kitty Hawk*–class flattop USS *America* (CV 66) was the subject of four weeks of extensive survivability testing (referred to as a SINKEX) in May 2005.³⁶ The tests were designed to support the development of the future large nuclear carriers.³⁷ *America*, with its double hull and more than a thousand watertight compartments, stubbornly resisted sinking; in the end, sending it to the bottom required deliberately opening the scuttles.³⁸ Granted, a controlled SINKEX is not

a combat test, but it does suggest that the current *Nimitz*- and *Ford*-class carriers—which were built as *improved* versions of *America*—incorporate superior survivability.

Bonhomme Richard Fire

USS *Bonhomme Richard* (LHD 6) was a large amphibious-warfare ship much like an aircraft carrier. In July 2020, it was moored at Naval Station San Diego, California. The ship was undergoing upgrades to allow it to operate F-35B Lightning aircraft, as one of the so-called Lightning carriers, such as the most recent USS *America* (LHA 6), a similar large, amphibious warship that recently deployed with thirteen F-35B Marine Corps Lightning aircraft.³⁹

Bonhomme Richard then underwent an unintended test of aviation-ship survivability. On 12 July 2020, the ship suffered a fire that resulted in severe damage. It affected eleven of the ship's fourteen decks, buckled segments of the flight deck, damaged the vehicle storage area, and gutted the command-and-control spaces located in the ship's island. The damage was so severe that *Bonhomme Richard* was declared beyond economical repair.⁴⁰

The blaze demonstrates the vulnerability of large amphibious ships that act as light carriers. While ships such as *Bonhomme Richard* and *America* look like aircraft carriers, and in fact are larger than World War II-era flattops such as *Franklin*, they are not built to the same survivability standard as are full-size carriers.⁴¹ They have little armor; more important, they incorporate little compartmentation, having large, open spaces that include well decks for landing craft and large storage parks for vehicles as key components of their mission to transport and land Marines. These characteristics add to the overall vulnerability of amphibious ships compared with purpose-built aircraft carriers.

OPTIONS FOR CARRIER SIZE

There are infinite varieties of potential carrier designs. For purposes of this article, it is useful to reduce that variety to three general sizes for consideration.

The Ford-Class CVN

The current *Ford*-class carrier is in serial production, with a planning goal of at least six ships. This was the first carrier designed under the post-Goldwater-Nichols joint-bureaucratic process. While *Ford* has essentially the same hull as USS *Nimitz* (CVN 68), changes from *Nimitz* to *Ford* originated with Navy participation but without the Navy having final decision authority. Many of those twenty-three changes were based on undeveloped technologies and have been the source of billions of dollars in cost overruns and years of delay.⁴² They include engineering challenges with the electromagnetic catapults (EMALS), advanced arrestor gear, and elevators.

Ford also has been unable, so far, to meet the contracted rate of 160 sorties per day.⁴³ The *Ford* catapult system in particular has not been able yet to match the *Nimitz* sortie-generation capability, which approached 130 sorties per day during the initial part of the 2003 Iraq war. But that raises a more fundamental question: Is there any need for a higher number of sorties than *Nimitz* flattops can provide? The requirement for a higher number came from a joint requirement committee that based it on the old Vietnam War-era Alpha strike, or “aluminum cloud,” operation—which no longer is conducted.⁴⁴

A more serious, as yet unsolved problem that goes beyond mere reliability is that if one electromagnetic catapult goes down, all go down. The FY-20 Director of Operational Test and Evaluation annual report stated, “[T]he crew cannot readily electrically isolate EMALS components during flight operations due to the shared nature of the Energy Storage Groups and Power Conversion Subsystem inverters on board CVN 78 [*Ford*]. The process for electrically isolating equipment is time-consuming; spinning down the EMALS motor/generators takes 1.5 hours by itself. This inability precludes EMALS high power maintenance during flight operations.”⁴⁵

These new, unproven technologies mandated by the joint bureaucracy have caused delays that have increased the cost of the first unit to \$13.3 billion so far. This represents an increase of over \$3.3 billion from original estimates—to double the cost of the last *Nimitz*.⁴⁶

The *Ford* class, like the *Nimitz*, can be built in only one shipyard, effectively making Newport News Shipbuilding a monopoly. This makes it difficult to obtain innovation or cost savings in construction.

A New Midway-Size CVM

The *Midway*-class carriers of the immediate post–World War II era were developed to incorporate all the lessons from the Pacific War. *Midway* went on to serve a forty-six-year career, from 1945 through the 1991 Gulf War. *Midway* was roughly two-thirds the size of *Nimitz*. While a new *Midway*-size carrier would operate fewer aircraft than *Nimitz*/*Ford* vessels, its catapult and arrested-landing configuration would allow it to operate all current and planned U.S. naval aircraft.

Changes in the oil-supply situation, including the U.S. transition from net oil importer to exporter, as well as lower prices, would make a new, conventionally powered, 65,000-ton carrier much less costly to build and operate than a *Ford*-class flattop. There are several options for proven, low-risk, conventional propulsion systems, ranging from diesels through gas turbines to combined diesel and gas-turbine (CODAG) systems. Nuclear power also is an option, especially using existing, proven submarine power plants. A modern *Midway*-size carrier would offer 368,000 square feet of weapons storage and 1.48 million gallons of aviation

fuel—not as much as a *Nimitz/Ford* platform, but enough to support more than eighty sorties per day and at least a week of sustained operations.⁴⁷

A future *Midway*-size carrier would incorporate all the survivability features of the CVNs. These would include extensive watertight compartmentation and lighter-weight yet much more effective side protection than heavy belt armor, and would incorporate advanced firefighting capability employing the latest technology.

LHD/LHA Lightning Carrier

Other platforms often mentioned as candidates to serve as light carriers, or to augment the current carrier force, are the ships of the U.S. “big deck” amphibious force. It consists of *Wasp*-class landing helicopter docks (LHDs) and the new *America*-class landing helicopter assault ships (LHAs).

The eight ships of the *Wasp* (LHD 1) class and the current three *Americas* are amphibious-warfare ships designed for helicopter assault and well-deck-based landing operations with embarked U.S. Marines or other ground forces. Weighing in at over 45,000 tons and stretching almost 850 feet in length, they are nearly the size of the original *Midway* when it commissioned in 1945.⁴⁸

These ships’ size and aircraft carrier–like flight decks have allowed them to operate the AV-8B Harrier II ground-attack aircraft for decades—in a secondary role, as an air/ground-attack element of Marine Corps amphibious, and later expeditionary, forces. An earlier LHA-class ship, *Nassau* (LHA 4), acted as a carrier during Operation DESERT STORM in 1991, and later the small force of six Harriers aboard *Kearsarge* (LHD 3) played an outsize role in 2011’s Operation ODYSSEY DAWN against Mu’ammar Gadhafi’s Libyan forces. As noted earlier, *America* recently deployed with thirteen F-35Bs embarked to test the Lightning carrier concept.⁴⁹

Yet while these ships are large and carrier-like in many ways, they are built to a much lower standard of survivability than conventional flattops and are much slower, with a best speed of twenty-four knots. The fire on and subsequent decision to scrap *Bonhomme Richard* further suggest that the big-deck amphibious ship is not a viable carrier design.

NUCLEAR VERSUS CONVENTIONAL PROPULSION: COST AND RELATED FACTORS

The U.S. Navy has not built a nonnuclear-powered aircraft carrier since the first USS *John F. Kennedy* (CV 67) was commissioned in 1968. The last conventionally powered carrier, USS *Kitty Hawk* (CV 63), was decommissioned in 2009.

However, Congress has dropped earlier legislation mandating that all carriers be nuclear propelled.⁵⁰ Another issue that was not appreciated fully in the late 1970s is that of nuclear carrier defueling and ultimate disposal.

Nonetheless, the U.S. Navy has been committed to nuclear propulsion for aircraft carriers. Yet apart from the operational advantages of nuclear power, there are significant cost differentials compared with conventional options. Some quick illustrations follow:

- Acquisition: The current estimated cost of a nuclear plant producing 280,000 shaft horsepower is \$9.7 billion.⁵¹ The Navy has not analyzed the current estimated cost of a conventional plant producing the same horsepower using the latest technology, but it likely would be significantly less than that of the nuclear plant.
- Refueling (as part of a regular refueling complex overhaul [RCOH]): The cost for a nuclear carrier is \$678 million.⁵²
- Defueling: Current cost estimates for defueling and recycling a nuclear carrier at retirement range from \$750 million to \$1.5 billion (depending on whether a military or commercial shipyard is used).⁵³
- Fueling: The Navy has not calculated the current estimated annual cost of fueling a conventional carrier with modern diesel, gas-turbine, or CODAG propulsion at today's fuel prices.
- Lost availability: An RCOH takes two years, whereas conventional flattops have no comparable loss of operational availability.

A General Accounting Office study in 1998 put the operating cost differential at about 10 percent in favor of conventional propulsion. The Navy believed that nuclear propulsion offered 10 percent more in terms of operational advantages, most notably in terms of fossil fuel costs.⁵⁴

Since those studies were conducted, two things have changed. First, technology has increased vastly the availability of fossil fuel in the United States; its effective average cost today is a small fraction of what it was in the 1990s. Another significant difference is that now there is only one (monopoly) shipbuilder for supercarriers, leading to the runaway costs of the *Ford*-class carrier. In the words of a 2017 RAND study, “[C]ontinuing the *Ford*-class carrier program imposes high acquisition cost and might unduly affect the whole of the Navy shipbuilding budget.”⁵⁵

Other problems, with *Ford*'s electromagnetic catapults and arresting gear and new radar systems, have delayed the ship's first deployment further. The follow-on units to *Ford* also have continued to see cost increases. Cost estimates for Newport News Shipbuilding to design and construct *John F. Kennedy* have increased by \$3.58 billion so far.⁵⁶

The aircraft carrier has been the single most expensive platform in the U.S. military ever since World War II, but the cost of the *Ford* class is out of proportion to that of any of its predecessors. There are several reasons for this. It is the first

carrier procurement managed by the joint Pentagon bureaucracy established by the Goldwater-Nichols reforms of the 1980s, rather than by the Navy itself. Joint Requirements Oversight Committee inputs added twelve undeveloped technologies to the design, including electromagnetic catapults, arresting gear, and elevators, along with new radars and other fundamental elements of the ship's infrastructure—none of which existed at the time of the contract, and some of which have not been completed or tested successfully even at this writing.⁵⁷ Some skeptics

COCOMs—not surprisingly—prefer to hold on to naval forces for as long as they can. These regional demands are being met at the cost of grinding down the ships and sailors.

have described the *Ford* carrier as a seagoing camel (*camel*: a horse designed by a committee). The ship was authorized in FY-08. Now, thirteen years later, the cost so far, in 2008 dollars, is over \$14

billion—and still climbing, since not all of its systems have been fully certified.⁵⁸ By contrast, the first ship of the *Nimitz* class (roughly the same size as *Ford*) took nine years from contract (1967) to deployment (1976) and cost \$4 billion in 2008 dollars, adjusted for inflation. (*Nimitz* cost about \$1 billion in 1975 dollars.)⁵⁹

Required maintenance also restricts carrier availability. Even a dozen super-carriers cannot meet the demands from the regional combatant commanders (COCOMs). The Goldwater-Nichols Act of 1986 gave COCOMs the authority to issue demand signals for forces, and in effect force the Navy to provide more carriers for their operations, even when it means the ships forgo required maintenance and their crews' required training.⁶⁰

REQUIRED NUMBERS

The Korean War demonstrated a calculus that has remained consistent to the present day. For every deployed flattop, the Navy must possess three: the first carrier on station; the second in the shipyard undergoing refit; and the third in the training cycle, preparing to deploy.

Since the 1970s, carrier deployments have been concentrated in three hubs: the Mediterranean Sea, the western Pacific Ocean, and the Arabian Sea. The force requirements to maintain combat-credible power in those regions have played a prominent role in determining both the numbers of carriers needed and the size of the rest of the fleet.

When the Soviet Union collapsed and the Cold War ended, the number of flattops required declined to twelve. The hope was that a dozen carriers could provide the appropriate global deterrent, perform Middle East war-fighting missions, and conduct presence operations in at least one other deployment region, as stipulated in the 1993 Bottom-Up Review document.⁶¹

The Navy has tried to stretch the eleven-carrier force to cover the demands of the COCOMS; however, the Navy has learned—and relearned the hard way—that the service cannot do more with less. The tried-and-true system of three carriers in rotation, intended to keep one forward-deployed, was able—in the emergency circumstances of wartime—to provide instead two out of the three; but that cannot be maintained in peacetime without severe damage to retention, maintenance, and readiness. That is where we are today. The Navy needs more ships.

Recent deployment lengths suggest this shortage is not going away. In January 2020, the carrier *Abraham Lincoln* (CVN 72) set a dubious record in making a yearlong deployment—the longest of any flattop since the Vietnam War.⁶² *Dwight D. Eisenhower* and *Theodore Roosevelt* made nine-month deployments in 2020.⁶³ *George H. W. Bush* (CVN 77) has completed a nine-month deployment, *Carl Vinson* (CVN 70) completed a 9.5-month deployment, and *Theodore Roosevelt* will complete an 8.5-month deployment in 2021.⁶⁴ Despite strenuous efforts by a succession of SECNAVs and CNOs to reduce the length of carrier deployments, they have failed. Since the Goldwater-Nichols reforms of 1987, the CNO has no authority over the ships once they deploy in response to a request from a COCOM, and COCOMs—not surprisingly—prefer to hold on to naval forces for as long as they can. These regional demands are being met at the cost of grinding down the ships and sailors. Again: The Navy does not have enough ships.

The last Trump administration SECDEF, Mark T. Esper, did not support adding carriers to the fleet. He suggested that as few as eight carriers and no more than eleven were needed. He called for replacing them with alternative force structures, including unmanned surface and subsurface units.⁶⁵ These hopes are naive; many of the notional low-end platforms suggested as carrier replacements, and the logistics needed to support a large number of such units in a distributed deployment, simply do not exist.

The Navy cannot afford the time needed to travel—again—down the road of troubled joint ship classes when a rapid expansion of fleet capability is sorely needed now.

AN ELEVEN-CARRIER NAVY IN A FIFTEEN-CARRIER WORLD

The immediate post–World War II U.S. Navy and its Cold War successor embodied a mix of capabilities in both high- and low-end units. Both navies, however, were built around carriers, as combat from the 1940s to the 1980s Falklands War proved that surface combatants cannot operate in the absence of sea-based air superiority. The carrier is not the only USN offensive platform that can strike targets ashore; other surface ships and submarines provide significant capability in terms of missile firepower. However, the carrier is the only platform that can

provide a mobile dome of 24/7 air superiority over the 71 percent of the earth's surface covered by seawater. Carriers exist to protect the missile shooters as much as to conduct strikes themselves. Even distributed, low-end missile shooters, manned or unmanned, will require air superiority. And naval or other military supply ships, commercial tankers, transports—none of these can survive on the surface of the sea without air superiority above them.

The current great-power competition is playing out in at least three major geographic areas. Given the Chinese navy's growth and hostile intent, the geography of the Indo-Pacific—containing few and limited land bases—is a matter of particular concern.

Considering the current and increasing commitments of U.S. naval forces to multiple deployment hubs, the corrosive strain those deployments have placed on the current carrier fleet, the absence of any suitable alternative platform or system, and the lack of any available replacements for our current carriers, it is urgent that we build a larger carrier fleet than the present eleven- or twelve-flattop force. An increased level of sea-based aviation is of paramount importance, so more aircraft carriers are needed. However, they need not all be nuclear-powered supercarriers.

Factors

This article confirms the irreplaceable value of sea-based aviation as provided by the aircraft carrier, and it tees up the choices regarding that platform. A robust carrier force is required if the U.S. Navy is to do its part in assuring allies and partners of its credibility to deter and, if necessary, compel opponents to cease hostile actions and support war termination on terms favorable to the United States, its allies, and partners.

The following summarized principles apply.

Missions. The missions for airpower at sea in the third decade of the twenty-first century remain robust and varied as the Navy returns to great-power competition with China and Russia. As noted above, the Indo-Pacific region, and the Arctic as well, offers few locations for land-based aviation. Regions more familiar from recent U.S. combat action, such as the eastern Mediterranean and Persian Gulf, do offer provisions for land-based aviation, but shifting political climates can limit access, and improved ballistic- and cruise-missile technologies threaten all fixed installations.

These geographic and political issues suggest that carrier-based aviation will remain a vital component of U.S. joint-force action in forward locations not only at the beginning of but throughout any sustained conflict. The carrier and its embarked aircraft are agile in their missions and can shift at short notice from performing sea control to power projection ashore to humanitarian-service

operations. The need for robust airpower at sea will remain a constant for the near future.

Survivability. No surface warship is more survivable than the large aircraft carrier. Dispersal of forces among smaller flattops might reduce susceptibility to attack, but any flattop smaller than fifty thousand tons displacement will be more vulnerable to and less able to recover from damage.

The return to active competition with the Soviet Navy in the 1980s (after a focus on air strikes ashore in Vietnam) led to innovations in operations that reduced carrier vulnerability. The new Chinese and returning Russian threats likewise will spur a return to a more aggressive carrier posture at sea, with more deception operations to reduce vulnerability.⁶⁶

Just as threats have increased, so have the carrier's defenses. These come in the form of attack-submarine escorts, antisubmarine helicopters, and constantly improving technology in its Aegis escorts.

Finally, if carriers are attacked successfully, the accidents of the 1960s and the recent SINKEX of the ex-USS *America* suggest that large carriers can survive tremendous punishment. The recent *Bonhomme Richard* fire tells us, however,

A new, twenty-first-century design of the size of . . . USS Midway and supporting an air wing of sixty to sixty-five aircraft could serve as a complement to the larger nuclear flattops while still incorporating rugged survivability and being capable of independent operations.

that ships not purpose-built as fleet carriers may suffer catastrophic failure even in cases of moderate damage, and they lack the ability of larger flattops to return to flight operations after taking heavy damage. Amphibious-warfare

ships such as *Bonhomme Richard* can support Marine aviation in a ground-support role and might serve as auxiliary carriers in low-threat regions, but they cannot pretend to be fleet carriers.

Numbers. How many carriers does the U.S. Navy need to carry out its global operations? Adversaries may change but geography does not, and analyses from diverse periods (the 1980s, 1993 [the Bottom-Up Review], and 2015) suggest that the U.S. Navy needs at least fifteen carriers to cover three deployment hubs effectively without prematurely exhausting both the ships themselves and the sailors who crew them.⁶⁷ Actual wartime operations likely would require more flattops.

Cruise missiles launched by surface ships are an important component of naval power, but it would take dozens of those ships—as well as a currently nonexistent rearming and resupply force to keep enough of them at sea—to serve as an effective deterrent or a sustained strike capability. Even then, they would require an escorting carrier to protect them from aerial attack.

Cost. The *Ford* class is too expensive for it to be the ship that increases the carrier fleet. A smaller, conventionally powered flattop that is large enough to support a sixty-five-plane air wing would take advantage of the new U.S. status as a net oil provider to operate at a lower cost than can a nuclear flattop.

Above all, a carrier of this size can be built competitively—in multiple yards, by more than one builder—and that competition will improve innovation and drive down costs. Restoring competition in the defense marketplace, for both ideas and products, is essential if we are to regain control of the current runaway costs.

Choices

The Navy needs fully capable, nuclear-powered carriers. The *Nimitz* class represents one such option, but half of the operational lifespan of those vessels is already behind them.

The *Ford* class, encumbered with immature technologies and a rising price tag, cannot be the only carrier solution going forward into the next decade. Increasing threats from peer competitors and regional powers demand a mix of carrier capabilities.

The existing USN big-deck amphibious warships—LHDs of the *Wasp* class and LHAs of the *America* class—have been adapted as Lightning carriers, embarking upward of two F-35 squadrons. However, they are too slow, they lack survivability, and in the absence of catapults they cannot support the vital early-warning and electronic-warfare aircraft crucial to the success of the strike/air-defense aircraft.

A new, twenty-first-century design of the size of the very successful USS *Midway* and supporting an air wing of sixty to sixty-five aircraft could serve as a complement to the larger nuclear flattops while still incorporating rugged survivability and being capable of independent operations. Such a ship could be designed and built in far less time than *Ford*, could be built competitively in more than one shipyard, and would cost far less. Even if, for industrial-base reasons, such a ship were nuclear powered, it might use reactors already developed for our submarine fleet.

The aircraft carrier's roles and missions have remained controversial in the hundred years since its introduction to world navies. Critics have declared that carriers could not survive bombs from dirigibles, battleship guns, dive-bombers, kamikazes, submarine torpedoes, cruise missiles, sea-skimming supersonic missiles, ballistic missiles, and hypersonic missiles.⁶⁸ Yet in the age-old seesaw of offense versus defense, carrier critics consistently have been proved wrong.

Since World War II, the U.S. Navy has faced existential questions concerning the future of the flattop on three distinct occasions (in 1949, during the late

1970s, and during the early 1990s), in addition to the current debate over carrier choices. All those debates eventually were resolved in favor of the carrier's continued role in naval operations. It remains clear that the aircraft carrier should continue as the centerpiece of USN combat power. Submarine- and surface-launched missiles are indeed important components of naval combat power, but they cannot replace the carrier.

The authors believe that the ships presented here constitute a complete set of practical candidates. Unending debate about and continued drift among the carrier choices presented by the executive and legislative branches, as well as the Navy itself, will result only in further erosion of naval capability, and thus national security.

In our judgment, the best choice is the *Midway*-size CVM carrier. It would be big enough to carry a full, three-dimensional air wing; could make speeds well above thirty knots; would deploy the highest-technology, close-in, electronic, cyber, and kinetic defenses; and would enjoy all the survivability of the *Nimitz* and *Ford* classes, not only owing to size but by incorporating multiple hulls, armored decks and side protection, full watertight compartmentation, and the latest firefighting technology. Finally, such a carrier would be small enough to be built in at least four American shipyards at a competitive price, at a fraction of what the *Ford* class costs.

The Navy—not a joint or multiservice committee—should design and procure this ship, and then the Navy must be held accountable. It is time to make a choice and proceed to construction.

NOTES

1. D. K. Brown, *The Grand Fleet: Warship Design and Development, 1906–1922* (Barnsley, U.K.: Seaforth, 2010), p. 117.
2. Jeffrey Barlow, *From Hot War to Cold: The U.S. Navy and National Security Affairs, 1945–1955* (Stanford, CA: Stanford Univ. Press, 2009), p. 213.
3. David A. Rosenberg, “Arleigh Burke: The Last CNO,” *Naval History and Heritage Command*, 2 September 2020, history.navy.mil/.
4. Michael T. Isenberg, *Shield of the Republic: The United States Navy in an Era of Cold War and Violent Peace, 1945–1962* (New York: St. Martin's, 1993), pp. 181–83, 279.
5. Jeffrey G. Barlow, *Revolt of the Admirals: The Fight for Naval Aviation, 1945–1950* (Washington, DC: Naval Historical Center, 1994), p. 288.
6. Author recollection.
7. National Security Agency (NSA) / Central Security Service (CSS), *The National Security Agency and the EC-121 Shootdown*, U.S. Cryptologic History, Special Series Crisis Collection 3 ([Fort Meade, MD]: Office of Archives and History, 1989), p. 1.
8. Edward C. Keefer, *Harold Brown: Offsetting the Soviet Military Challenge, 1977–1981* (Washington, DC: Historical Office of the Secretary of Defense, 2017), p. 368.
9. “Theodore Roosevelt (CVN-71) Commissioned,” *Maritime Reporter*, December 1986, pp. 31–32.

10. Ronald O'Rourke, *Navy Force Structure and Shipbuilding Plans: Background and Issues for Congress*, CRS Report (Washington, DC: Congressional Research Service, 14 June 2012), p. 20.
11. John F. Lehman, *Command of the Seas* (Annapolis, MD: Naval Institute Press, 2001), pp. 120–21.
12. John Lehman, preface to *Oceans Ventured: Winning the Cold War at Sea* (New York: W. W. Norton, 2018).
13. Henry H. Mustin, with David Winkler, *The Oral History of Vice Admiral Henry C. Mustin* (Washington, DC: Naval Historical Foundation, July 2001), pp. 169–73.
14. Lehman, *Oceans Ventured*, pp. 236–37.
15. Dov S. Zakheim, "Lehman's Maritime Triumph," review of *Oceans Ventured: Winning the Cold War at Sea*, by John Lehman, *Naval War College Review* 71, no. 4 (Autumn 2018), p. 145.
16. Lorna Jaffee, *The Development of the Base Force 1989–1992* (Washington, DC: Office of the Chairman of the Joint Chiefs of Staff, July 1993), p. 12; "US Ship Force Levels, 1886–present," *Naval History and Heritage Command*, 17 November 2017, www.history.navy.mil/.
17. *Building the Fleet We Need: A Look at Navy Force Structure; Hearing before the Subcomm. on Seapower and Projection Forces of the H. Comm. on Armed Services*, 114th Cong. (2017) (testimony of John F. Lehman), available at www.govinfo.gov/.
18. Goldwater-Nichols Act of 1986, Pub. L. No. 99-433, 100 Stat. 992, 996, available at www.congress.gov/.
19. Ryan A. Peek, *Aircraft Carrier Requirements and Strategy, 1977–2001*, Contributions to Naval History 9 (Washington, DC: Naval History and Heritage Command, 2020), pp. 65, 148, 151.
20. Ronald O'Rourke, *Navy Ford (CVN-78) Class Aircraft Carrier Program: Background and Issues for Congress*, CRS Report (Washington, DC: Congressional Research Service, 22 December 2020), p. 1.
21. Ronald O'Rourke, *Navy Force Structure and Shipbuilding Plans: Background and Issues for Congress*, CRS Report (Washington, DC: Congressional Research Service, 17 September 2020), p. 1.
22. Mark Episkopos, "Could China Have 6 Aircraft Carriers by 2035?," *National Interest*, 29 December 2020, nationalinterest.org/.
23. Fiona Cunningham, "The Maritime Rung on the Escalation Ladder: Naval Blockades in a US-China Conflict," *Security Studies* 29, no. 4 (2020), p. 732.
24. Steven Wills, "These Aren't the SLOCs You're Looking For': Mirror-Imaging Battles of the Atlantic Won't Solve Current Atlantic Security Needs," *Defense & Security Analysis* 36, no. 1 (2020), p. 38.
25. Michael Kofman, "It's Time to Talk about A2/AD: Rethinking the Russian Military Challenge," *War on the Rocks*, 5 September 2019, warontherocks.com/.
26. Robert Dalsjö, Christofer Berglund, and Michael Jonsson, *Bursting the Bubble: Russian A2/AD in the Baltic Sea Region; Capabilities, Countermeasures, and Implications* (Stockholm: Swedish Defence Research Agency [FOI], 2019), p. 10.
27. Felix K. Chang, "Taking Flight: China, Japan, and South Korea Get Aircraft Carriers," *Foreign Policy Research Institute*, 14 January 2021, fpri.org/; Kyle Mizokami, "Here's Every Aircraft Carrier in the World: Consider This Your Comprehensive Guide to Air Power at Sea," *Popular Mechanics*, 16 December 2020, popularmechanics.com/.
28. U.S. Navy Dept., *USS Franklin CV-13, War Damage Report 56* (Washington, DC: Bureau of Ships, 15 September 1946), pp. 8–9.
29. Norman Friedman, *U.S. Aircraft Carriers: An Illustrated Design History* (Annapolis, MD: Naval Institute Press, 1983), pp. 153–56, 232.
30. U.S. Navy Dept., *USS Franklin CV-13*, p. 8.
31. *Ibid.*, pp. v–vii.
32. Scot McDonald, "Evolution of Aircraft Carriers: CVB's; The Battle Carriers," *Naval Aviation News*, January 1963, p. 28.
33. Nicolai Timenes Jr., *Defense against Kamikaze Attacks in World War II and Its Relevance to Anti-ship Missile Defense*, vol. 1, *An Analytical History of Kamikaze Attacks against Ships of the United States Navy during World War II* (Alexandria, VA: Center for Naval Analyses,

- Operations Evaluation Group, November 1970), p. 54.
34. Shawn Woodford, "The Most Difficult Anti-aircraft Problem Yet Faced by the Fleet: U.S. Navy vs. Kamikazes at Okinawa," *Naval History and Heritage Command*, 18 June 2020, www.history.navy.mil/.
 35. John F. Lehman, *Aircraft Carriers: The Real Choices* (Beverly Hills, CA: Sage, 1978), p. 41.
 36. Tyler Rogoway, "This Is the Only Photo of a U.S. Navy Supercarrier Being Sunk," *War Zone*, 4 August 2018, www.thedrive.com/.
 37. U.S. Navy Dept., *Department of the Navy Fiscal Year (FY) 2007 Budget Estimates Submission: Justification of Estimates* (Washington, DC: Deputy Assistant Secretary of the Navy for Research, Development, Test and Evaluation, February 2006), p. 234.
 38. Peter Dujardin, "USS America's Sunken Location Revealed," *Daily Press*, 20 November 2006, www.dailypress.com/.
 39. Megan Eckstein, "Marines Test 'Lightning Carrier' Concept, Control 13 F-35Bs from Multiple Amphibs," *U.S. Naval Institute News*, 23 October 2019, news.usni.org/.
 40. Megan Eckstein, "Navy Will Scrap USS Bonhomme Richard," *U.S. Naval Institute News*, 30 November 2020, news.usni.org/.
 41. Scott C. Truver, "Essay: When It Comes to Ship Survivability, Prayer Isn't Enough," *U.S. Naval Institute News*, 4 February 2016, news.usni.org/.
 42. "Welcome to the Fleet, USS Gerald R. Ford," *Naval Aviation News*, Summer 2017, navalaviationnews.navylive.dodlive.mil/.
 43. Ronald O'Rourke, *Navy Ford (CVN-78) Class Aircraft Carrier Program: Background and Issues for Congress*, CRS Report (Washington, DC: Congressional Research Service, 29 July 2021), p. 26.
 44. Benjamin S. Lambeth, *American Carrier Air Power at the Dawn of a New Century* (Santa Monica, CA: RAND, 2004), p. xi.
 45. Robert F. Behler, *Director, Operational Test and Evaluation FY2020 Annual Report* (Washington, DC: U.S. Defense Dept., January 2021), p. 137.
 46. Throughout this article we have used the cost estimates that DoD has provided to Congress. However, knowledgeable officials involved with the program now estimate that the final cost will be \$17.8 billion—and that is before the shock tests of the ship, which could have a significant cost impact.
 47. "CVV," *Naval Aviation News*, July 1979, pp. 10–12, navalaviationnews.navylive.dodlive.mil/.
 48. "America-Class Amphibious Assault Ship—LHA," Seaforces.org.
 49. Eckstein, "Marines Test 'Lightning Carrier' Concept."
 50. Ronald O'Rourke, *Navy Nuclear-Powered Surface Ships: Background, Issues, and Options for Congress*, CRS Report (Washington, DC: Congressional Research Service, 2010), p. 3; Eric Labs [Congressional Budget Office naval analyst], interview by authors, 20 March 2021.
 51. David A. Perin and John B. Newman, *CVX Analysis of Alternatives: Final Results for Part 2* (Alexandria, VA: Center for Naval Analyses, November 1998), p. 33. We used the CNA methodology to calculate 280,000 shaft horsepower power costs for nuclear and conventional carriers, adjusted for inflation to 2021 values.
 52. Jeremy Bender, "The Pentagon Wants \$678 Million to Refuel a Single Aircraft Carrier," *Business Insider*, 2 February 2015, sports.yahoo.com/.
 53. Government Accountability Office, *Aircraft Carrier Dismantlement and Disposal: Options Warrant Additional Oversight and Raise Regulatory Questions* (Washington, DC: August 2018), p. 33.
 54. General Accounting Office, *Navy Aircraft Carriers: Cost-Effectiveness of Conventionally and Nuclear-Powered Carriers* (Washington, DC: August 1998), pp. 69–71, 80, 159–60.
 55. Bradley Martin and Michael McMahon, *Future Aircraft Carrier Options* (Santa Monica, CA: RAND, 2017), p. ix.
 56. Anthony Capaccio, "Next Carrier's Cost Creeps Up after First One Hit \$13.3 Billion," *Bloomberg News*, 5 August 2020, bloomberg.com/.
 57. Government Accountability Office, *Ford-Class Carriers: Lead Ship Testing and Reliability Shortfalls Will Limit Initial Fleet*

- Capabilities* (Washington, DC: September 2013), p. 11.
58. O'Rourke, *Navy Ford (CVN-78) Class Aircraft Carrier Program* (29 July 2021), p. 2.
 59. "Bringing the Federal Budget Closer to Home," *New York Times*, 23 November 1975, www.nytimes.com/.
 60. *The Future of Seapower: Hearing before the Subcomm. on Seapower and Projection Forces of the H. Comm. on Armed Services*, 113th Cong. (2013) (testimony of John F. Lehman), available at www.govinfo.gov/; Mackenzie Eaglen, "Putting Combatant Commanders on a Demand Signal Diet," *War on the Rocks*, 9 November 2020, warontherocks.com/.
 61. Les Aspin, *The Report on the Bottom-Up Review* (Washington, DC: U.S. Defense Dept., October 1993), p. 50.
 62. Gidget Fuentes, "Lincoln Strike Group CO: Record Deployment Marks New Uncertainty for Fleet," *U.S. Naval Institute News*, 20 January 2020, news.usni.org/.
 63. Geoff Ziezulewicz, "Another Week, Another Spate of Nine-Month Ship Deployments," *Navy Times*, 14 October 2020, navytimes.com/.
 64. Multiple *U.S. Naval Institute News* reports from 2015 covered these long carrier deployments. Megan Eckstein and Sam LaGrone, "Top Stories 2015: U.S. Navy Operations," *U.S. Naval Institute News*, 28 December 2015, news.usni.org/.
 65. David B. Larter, "Defense Department Study Calls for Cutting 2 of the US Navy's Aircraft Carriers," *Defense News*, 20 April 2020, www.defensenews.com/.
 66. Mustin, *The Oral History of Vice Admiral Henry C. Mustin*, pp. 169–71.
 67. Aspin, *The Report on the Bottom-Up Review*, p. 50.
 68. Robert W. Komer, *Maritime Strategy or Coalition Defense?* (Cambridge, MA: ABT Books, 1984), pp. 73–74.



SIZING THE CARRIERS

A Brief History of Alternatives

Sam J. Tangredi

Ironically, it was an arms-control treaty that set the U.S. Navy on the course of building a fleet centered on fast, large-displacement, heavy-tonnage, full-flight-deck aircraft carriers. Such ships sometimes are referred to as *supercarriers*.

THE HISTORICAL PROGRESSION

The First Carriers

The Washington Naval Treaty of 1921–22—now at its hundredth anniversary—was an attempt by President Warren G. Harding and his Secretary of State, Charles Evans Hughes, to restrain a global naval arms race, particularly the naval competition among Great Britain, the United States, and Japan.¹ Idealism played a role, but there also was huge financial incentive; for the United States, with its army rapidly demobilized following World War I, naval expenditure was one of the largest federal government outlays.² And the most expensive platform was the battleship—the capital ship of its day. Much as nuclear warheads were during the later SALT/START era, battleships were the ultimate measure of military power.³

Dr. Sam J. Tangredi is the Leidos Chair of Future Warfare Studies and professor of national, naval, and maritime strategy at the Naval War College. He served on active duty in the U.S. Navy, retiring as a captain. His most recent book (as coeditor) is AI at War: How Big Data, Artificial Intelligence, and Machine Learning Are Changing Naval Warfare (Naval Institute Press, 2021). In 1981–82, then-Lieutenant Tangredi was boilers and propulsion fuels officer in USS Ranger (CV 61).

In contrast, the fledgling aircraft carrier constituted an auxiliary issue during treaty negotiations, and for the United States and Britain an aggregate limit of 135,000 tons eventually was set, rather than any specific number of platforms; imperial Japan would be permitted 81,000 tons, per the 5 : 5 : 3 formula that guided the conference.⁴ However, there were some sublimits; no future carrier individually

Naval War College Review, Autumn 2021, Vol. 74, No. 4

was to exceed 27,000 tons displacement (nor carry any gun larger than an eight-inch). By the time of the treaty, Britain—which had invented the all-aviation warship—had commissioned five aircraft carriers, with two others under construction. All except the first displaced between 26,000 and 29,000 tons—the obvious source of the treaty limit on individual ships. In contrast, the United States had not yet commissioned its first carrier, USS *Langley* (CV 1), which was a converted collier that would have a displacement of approximately 14,000 tons at full load. Japan was building its first aircraft carrier—the world’s first purpose-built carrier constructed from the keel up, not a conversion—IJN *Hosho*, displacing slightly less than 10,000 tons.⁵ In consideration of the Royal Navy’s advantage, the treaty conference declared *Langley* and *Hosho* to be “experimental,” thereby not counting against the tonnage limit.⁶

To American naval aviation, the 135,000-ton limit was actually a godsend. The U.S. Congress had expressed no interest previously in ever building an aircraft carrier fleet to that aggregate size, and in its long-range planning for the construction of future carriers the Navy leadership had expected much less from a fiscally conservative Congress.⁷ Yet throughout the life of the treaty, the Department of the Navy was able to argue that the legislature needed to authorize building to that limit to maintain parity with the other treaty signatories—an argument that Congress eventually accepted.⁸

More importantly, there was another method of appealing to frugality. In addition to the United States disposing of older battleships and cruisers to achieve treaty limits in their respective categories, there were a number of under-construction warships, authorized during World War I but not completed, that would need to be scrapped. The American delegation to the Washington Conference proposed that each of the principal naval powers be allowed to convert two unfinished hulls into carriers, even if their displacements exceeded the 27,000-ton individual limit. Although this was of no advantage to a Royal Navy that was almost at its aggregate limit already, the proposal was accepted. As the U.S. Navy already had selected two unfinished battle cruisers, both of which likely would displace 33,000 tons, the conference agreed to 33,000 as the conversion limit. From this conversion came USS *Lexington* (CV 2) and USS *Saratoga* (CV 3).⁹ Until construction of USS *Midway* (CV 41) in 1945, they were the biggest and fastest (thirty-one-plus knots) aircraft carriers the United States had built. Their large hulls and flight decks allowed them to accommodate the steadily increasing size of naval aircraft without the need for continual modification.¹⁰

Small Carriers and the Flying-Deck Cruiser

The true significance of the acquisition of *Lexington* and *Saratoga* is that—until the two ships proved their superiority in the fleet battle problems of the late

1920s—even the staunchest supporters of naval aviation within the Navy’s leadership were convinced that a larger number of smaller carriers would be more operationally effective than a smaller number of supercarriers.¹¹

Rear Admiral William A. Moffett, the first chief of the Department of the Navy’s Bureau of Aeronautics—and often considered the father of naval aviation—was one of those so convinced.¹² While pleased with the commissioning of *Lexington* and *Saratoga*—whose allowance he himself essentially had arranged, as an influential expert assigned to the Washington Conference—Moffett frequently stated that “there is a far greater flight deck area available on a large number of small ships than a small number of large ships.”¹³

Following the Washington Conference, Moffett drew up proposals for five carriers of 13,800 tons—the smallest tonnage that could provide a flight deck of acceptable length.¹⁴ With 66,000 of the 135,000 tons permitted by treaty taken up by *Lexington* and *Saratoga*, the five small carriers would bring the Navy to the treaty limit while maximizing the number of flight decks.

However, Moffett considered the resulting seven total carriers to be insufficient, so he drafted an additional proposal for the construction of eight hybrid “flying deck cruisers.”¹⁵ Such a vessel would retain its forward emplaced guns but would have a flight deck covering most of the ship aft of the deckhouse. Moffett’s argument was that, as cruisers, these ships would not count under the treaty limitations on carriers.¹⁶ Estimated tonnage for each of these vessels was 10,000 tons—the limit for cruisers.¹⁷

The flying-deck cruiser actually gained the support of the Chief of Naval Operations (CNO), Admiral William V. Pratt, who—unlike Moffett—viewed it more as a cruiser than a small carrier.¹⁸ However, the Navy General Board, whose recommendations to the Secretary of the Navy effectively took precedence over the individual views of the CNO (until Admiral Ernest J. King became CNO as well as Commander in Chief, U.S. Fleet, in March 1942), was cool to the idea, rejecting it first in 1925.¹⁹ The follow-on to the Washington Conference, the London Naval Conference of 1930, retained the 135,000-ton limit on aircraft carriers.²⁰ This caused the General Board to reconsider, and Secretary of the Navy Charles F. Adams requested \$20 million for an experimental flying-deck cruiser in the Navy’s fiscal year (FY) 1932 budget request to Congress—unsuccessfully.²¹ There were at least two congressional supporters, but by then expenditures for the Navy no longer were a priority.²² With the onset of the Great Depression, neither the 13,800-ton small carriers nor the 10,000-ton flying-deck cruisers were built. Congress simply would not provide the money, and by the mid-1930s few in the naval leadership viewed either solution as a cost-effective method of massing airpower at sea.

Every Ship a Carrier?

Additionally, Moffett advocated that all ships, from battleship to destroyer, should embark aircraft: floatplanes (seaplanes), launched from trainable catapults. On their return, such planes would land on the ocean surface, then be winched back aboard. Tests proved that installation on destroyers was impractical; however, many battleships and cruisers were fitted with two scout aircraft. Moffett had argued for at least four—two scouts and two fighters. Proposed for the biggest ships was an addition of two bombers, for a total of six planes. In his estimate, these aircraft could conduct “small scale” offensive operations until the arrival of a carrier.²³

Selected ships retained and operated catapult aircraft in World War II for scouting and for spotting for gunfire, particularly when carriers were not available (such as at the 1944 Normandy invasion). However, the physical limitations of such seaplanes made them incapable of dueling with wheeled carrier aircraft and most land-based planes. The pre-World War II Navy was never afraid to retain “legacy systems” that might prove useful, and it experimented with and operated seaplanes from combatants for twenty-four years. But the sea itself proved too treacherous a landing deck, regardless of its “low acquisition cost.” Not only was it difficult to mass effects from small numbers of dispersed seaplanes—all of them inferior in combat capabilities to their land-based counterparts—but the environment itself proved the concept impracticable, and conducting small-scale offensive operations appeared suicidal.

However, technology did demonstrate eventually (about forty years after Moffett’s proposal) that the concept of every ship being able to carry aircraft was, in fact, viable—once the helicopter was perfected. Starting in the 1970s, the U.S. Navy’s Light Airborne Multipurpose System (LAMPS) embarked at least one aircraft (helicopter), and often two, on almost all cruisers, destroyers, and frigates, while a landing spot for a visiting helicopter was added to almost every other type of naval vessel.

These were very specialized aircraft, primarily designed for low, slow, anti-submarine warfare (ASW) operations, not for contesting with carrier-based conventional aircraft. LAMPS—like the problematic, preceding, drone antisubmarine helicopter (known as DASH) program and the subsequent embarked-drone aircraft of today—could be said to “conduct ‘small scale’ offensive operations until the arrival of a carrier.”²⁴ But that is only to conduct several specialized missions, in which the aircraft in question remain highly vulnerable to attack by conventional aircraft.²⁵ The most advanced vertical/short-takeoff-and-landing (V/STOL) aircraft—even if they could be operated from ships smaller than big-deck amphibious warships—cannot match the range, lift capacity, or combat effectiveness of carrier aircraft (despite vociferous claims to the contrary by their

proponents).²⁶ In any case, the concept clearly has yet to be proved as a substitute for a large-deck, all-aviation ship.

The Light Carrier Experience: USS Ranger

Moffett continued to consider the advantages of numerous smaller carriers, even as the speed and size of USS *Saratoga* enabled its famous simulated surprise attack on the Panama Canal in 1929.²⁷ Less heralded—perhaps because it seemed so disturbing in the light of subsequent events—was *Lexington* and *Saratoga*'s combined simulated surprise attack on Pearl Harbor in 1932.²⁸ Rear Admiral Joseph M. Reeves, Commander, Aircraft Squadrons, Battle Fleet, gradually had increased the aircraft complement of *Saratoga*, as well as on the small, slow *Langley*; while *Saratoga* was rated at seventy-four aircraft, Reeves increased its air wing to ninety, and *Langley*'s aircraft load was doubled from twenty-four to forty-eight.²⁹

Theoretically, two small carriers could provide the same number of aircraft in the air if they could be operated together against one lone large carrier. But what bedeviled Moffett—as it has every other small-carrier proponent up to today—is that he could not build a suitably capable smaller carrier for half the price of a larger ship that would have more than double the combat effectiveness. In building USS *Ranger* (CV 4) at 18,000 tons full displacement, he was able to keep the financial cost (in contemporaneous dollars) to approximately half the final construction cost of either *Lexington* or *Saratoga*, but it was at the opportunity cost of speed, survivability (no underwater protection, and consistently overweight in terms of sea keeping), and aircraft and weapons load. (In addition, the final costs of *Lexington* and *Saratoga*, which included a 90 percent overrun, were magnified by the nature of their conversion, so they were not considered representative.) *Ranger*, commissioned in 1934, initially could not carry torpedo bombers—which took on a greater significance during World War II than it bore at the ship's commissioning.³⁰

More importantly, *Ranger*'s small size meant that it could not keep up with the continuing increases in size and maintenance requirements of newer aircraft, unlike *Lexington* and *Saratoga* and subsequent large carriers. This increase was required particularly to match the fighting capabilities of Japanese aircraft. So as aircraft on both sides became more capable, *Ranger* slipped toward obsolescence.³¹ The result was that the naval leadership deemed World War II Pacific operations too dangerous for *Ranger*, so it was kept in the Atlantic, where operations against U-boats were considered to be of slower pace and where the ship would not face attack by massed enemy aircraft. *Ranger* did participate in support of Operation TORCH and the North Africa landings.³² However, its overall contributions were not considered significant, because land-based aircraft were readily available in the European theater.³³

Rear Admiral Moffett did not live to see the commissioning of *Ranger*; he died in the crash of the airship USS *Akron* (ZRS 4) in 1933. However, a series of

“carrier spectrum studies” conducted prior to and during the development of *Ranger* estimated that four thousand additional tons of aircraft carrier displacement resulted in the ability to add fifteen more aircraft—which was why *Ranger* was built with an 18,000-ton displacement rather than the 13,800 that would have provided five carriers under the treaty.³⁴ But an additional four thousand on top of that might have added even more. Thus, the overall conclusion was that large carriers could be built at less of a relative incremental cost than was possible by restricting them to a smaller size. Reportedly, Moffett later in his career expressed regret at the decision to build *Ranger*. Moffett’s biographer William Trimble summarized the admiral’s conclusions, as contained in a 1931 letter to the Secretary of the Navy, as follows: “greater displacement, he argued, allowed higher speed, more compartmentalization, armor protection for machinery and magazine spaces, and more hangar and flight deck space.”³⁵ The experiment did not work.³⁶

The follow-on *Yorktown* (CV 5) and *Enterprise* (CV 6) were each of 25,000 tons full displacement. Another small carrier, USS *Wasp* (CV 7), similar to *Ranger*, was built at 18,000 tons displacement; however, it had been approved in 1934, before *Ranger* proved itself inadequate.³⁷ Subsequent fleet carriers were built at 34,000 tons full displacement.

The Light and Escort Carriers of World War II

The U.S. Navy did build light and escort carriers to complement fleet carriers during World War II. Most were vessels specialized for the escort of convoys, air support for amphibious operations, and ASW. Flattops of their type were considered “mobilization carriers.” Many were converted civilian ships. The inexorable requirement to build warships as quickly as possible precluded taking the time necessary to construct an all-large-carrier force. To some extent, these ships were considered expendable—and some were expended. Again, the Navy needed mass and numbers, given the attrition inevitable in warfare.

The twenty-fifth through the thirtieth USN aircraft carriers were considered “light carriers” or “austere carriers” and were designated CVL. Each was built in two years or less, most were commissioned in 1943, and they sacrificed size and survivability for speed of construction.³⁸ Using materials already in the production pipeline, some were built on cruiser hulls.³⁹ Their displacements ranged from 16,000 to 19,000 tons. The Navy intended to operate them alongside the large fleet carriers (within large, carrier-centered battle groups)—as wingmen, if you will—not independently.⁴⁰ The ratio of propulsion plant to displacement was proportionally large, to generate the thirty-knot speed necessary to keep up with the larger fleet carriers. The CVLs’ goal was to provide as much *additional* air cover to the task force as possible. Operating within (and protected by) the task force, all these ships survived the war; however, “they did not lend themselves to the changing requirements of carrier aviation post war.”⁴¹

Escort carriers (CVEs) were built only to support the escorting of convoys (ASW), amphibious operations, and such duties as transporting aircraft (including land-based aircraft) to replace losses in the island campaigns.⁴² Some were of new construction, some were conversions; a total of 120 were built during the war.⁴³ Many were built for the Royal Navy. Again, speed of construction was everything; some were readied in ten months, from launch to commissioning. Their displacements ranged from 10,000 to 14,000 tons. Flight decks were one-third the size of those of fleet carriers.

With an average maximum speed of twenty knots, the CVEs could not operate with a battle group. During amphibious operations they were expected to remain under the air cover provided by the large fleet carriers or land-based U.S. Marine aviation, if the Marines were established ashore.⁴⁴ Protection against surface warships and submarines was provided by cruisers and destroyers. If the CVEs encountered Japanese ships when they were without protective carrier air cover (such as in the October 1944 battle of Samar), they were expected to withdraw. At Samar, a force of escort carriers and destroyers fought off a Japanese force, but at a loss of two CVEs by surface fire (plus two destroyers and a destroyer escort) and over one thousand sailors—more than at the Battles of the Coral Sea and Midway combined.⁴⁵

CVLs and CVEs were built to provide *additional* mass and numbers, to overwhelm Japanese forces. To put that in perspective, the Japanese entered World War II with eight carriers and built twenty-one total CV, CVL, and CVE equivalents during the war, whereas the United States entered World War II with eight fleet carriers (split between two oceans), then built 146 carriers of all sizes during the war (that number is dependent on the counting rules). To repeat: 21 versus 146.

CVLs and CVEs never were expected to substitute for fleet carriers. Rather, they depended on fleet carriers for their survival.⁴⁶

Postwar Carriers

USS *Midway* (CV 41) was the first aircraft carrier completed after the war, although its construction was started during the war. With an original displacement of approximately 45,000 tons, the ship dwarfed all previous carriers. It was the lead ship of an eight-carrier class.

Midway served for forty-seven years. Its large size allowed it and two counterparts, *Franklin D. Roosevelt* (CV 42) and *Coral Sea* (CV 43), to be converted to handle jet aircraft via the addition of an angled flight deck (among other modifications). A handful of the previous, smaller, World War II *Essex*-class carriers also were converted to handle jets, allowing them to take their turn on Yankee Station during the Vietnam War. The unconverted ships of the *Midway* class went on to other duties; for example, USS *Valley Forge* (CV 45) and the even older

Essex-class USS *Boxer* (CV 21) could be considered the first amphibious assault ships, comparable in concept to today's USS *America* (LHA 6), which, like *Valley Forge*, does not have a well deck and displaces 45,000 tons.⁴⁷

The bureaucratically bloody Department of Defense fight in 1949 over the proposed supercarrier *United States* (80,000 tons) resulted in cancellation of the program and a seeming repudiation of the value of the big-deck carrier—largely under the assumption that the next war would consist of nuclear strikes conducted by U.S. Air Force bombers. For many of the Navy participants, it took on the appearance of a fight for the service's very existence (along with that of the U.S. Marine Corps).⁴⁸

However, subsequent to the cancellation, real-world requirements dramatically changed perceptions and assumptions. The swift advance of the North Korean army into the South captured almost all land air bases available to the South Korean and U.S. air forces, so the initial means of applying airpower was the remaining World War II-era aircraft carriers. Thus, when the six-ship USS *Forrestal* class was built (1952–61), there was much less opposition.⁴⁹ Again, the perception was that the fast, large-displacement, heavy-tonnage, full-flight-deck aircraft carrier had been determined to be both necessary and combat proven.

Lingering Proposals and Alternatives

This did not mean that alternative proposals disappeared.⁵⁰ The continuing development of the helicopter and the prospective development of V/STOL technology inspired a continuing search for (presumably) lower-cost alternatives.

Helicopters certainly could not provide the capabilities of fixed-wing aircraft, but they could land Marines ashore, thereby bypassing the difficulties of surface amphibious landings. Therefore, supposedly lower-cost, specialized, “big deck” amphibious assault ships—which could remove this mission from the lengthy mission sets of conventional carriers—were justified.⁵¹

Great hopes were placed that V/STOL aircraft development would allow for smaller carriers that did not require long flight decks, catapults, and arresting gear. From 1972 to 1978, and particularly during the administration of President Jimmy Carter, the Office of the Secretary of Defense and the Navy examined a bevy of small-carrier proposals.⁵²

Frequently noted is CNO Admiral Elmo R. Zumwalt Jr.'s proposal for a V/STOL-carrying “sea control ship.”⁵³ However, Zumwalt himself directed the proposal to the specific mission of ASW, not as an alternative to the large air wings and immense strike capabilities of large carriers.⁵⁴ From Zumwalt's perspective, the search for alternatives constituted a quest to reduce the unit cost of ships to “recover from the disastrous slide” in the total number of ships in the overall fleet as the result of the retirement of the remaining (albeit modernized) World War II inventory.⁵⁵

The constant refrain of these proposals was the need to reduce the per-unit acquisition costs of ships, and the view that the increasing costs of large-carrier construction—resulting primarily from the inclusion of emerging technologies, along with the increasing cost of labor and materials, plus inflation—made the ships “unaffordable.”⁵⁶ However, this bumped up against the conundrum that V/STOL aircraft simply could not match conventional, fixed-wing aircraft in any mission area.⁵⁷ The physical reality is that the power and thrust required to lift aircraft vertically result in a necessary reduction in carrying load and fuel, as well as a potential reduction in speed as a result of configuration.⁵⁸ V/STOL aircraft could not compete effectively (or even survive) in an airspace dominated by capable, conventional military aircraft; rather, they could operate effectively only in conditions of limited opposing air threats.⁵⁹ The development of the “ski jump” that allowed V/STOL aircraft to be launched via a “rolling start” could increase carrying load and range, since less power and fuel would be required at takeoff—but not so significant an improvement that they could approach the capabilities of conventional carrier aircraft.⁶⁰ Meanwhile, development of the *Nimitz*-class, nuclear-powered, large-deck carrier (90,000 tons full-load displacement) had begun.

The debates on alternatives came to a climax when President Carter vetoed the FY-79 defense bill since it included long-term funding for a fourth *Nimitz*-class carrier. However, the ship eventually was reinstated owing to the requirement for unprecedented operations in the Indian Ocean to counter the global expansion of the Soviet Navy, as well as trouble in the Middle East in the wake of the fundamentalist revolution in Iran. To respond to these challenges, nuclear-powered, large-deck carriers appeared necessary.⁶¹

One rather slender argument made in favor of the U.S. Navy’s examination of other carrier configurations was that the Soviet Navy had adopted them successfully. If the Soviet Navy thought it could challenge the U.S. Navy on the high seas, it was postulated, there must be something to these configurations—particularly if they could be built more cheaply than a large, nuclear-powered CV.⁶²

Of particular interest were the *Kiev*-class “heavy aviation cruisers” or “heavy aircraft-carrying cruisers.” *Kiev* and its sisters appeared to be more-formidable warships than any individual platform in the U.S. inventory. Their foredecks bristled with awesome displays of cruise and surface-to-air missiles. These included the SS-N-12 Sandbox (nuclear capable), the SA-N-3 Shtorm, the SA-N-4 Gecko, the SUW-N-1 ASW rocket (nuclear capable), and the RBU-6000 depth charge system. Additionally, they carried 76 mm guns, torpedo tubes, and an assortment of close-in weapons. Their afterdecks were taken up with an angled flight deck that could accommodate a mix of thirty-two V/STOL aircraft and helicopters.⁶³ Essentially, they were Moffett’s flying-deck cruisers.

However, by the later stages of the Cold War it became apparent that although the *Kiev* class was capable of performing modest strike-at-sea missions, it was not designed to provide the capabilities of an aircraft carrier. It had a specialized mission: defending the Soviet nuclear strategic-ballistic-missile bastions in waters close to the Soviet Union.⁶⁴ This was a mission that the U.S. Navy obviously did not have. The missions that the U.S. Navy did have required capabilities beyond those offered by combat-limited V/STOL aircraft. The flying-deck cruisers—as devastating as they seemed visually—simply did not fit U.S. operational requirements.

THREE POINTS FOR DISCUSSION

What can one conclude from this history? Three points identify themselves.

The first is that—operationally—the U.S. Navy has sound reasons for preferring a large-deck aircraft carrier over any smaller variant.⁶⁵ History is our truest laboratory, and fast, large-displacement, heavy-tonnage, full-flight-deck aircraft carriers have proved superior in war. With nuclear power plants, they are globally deployable. They are not some sort of naval fetish.

Second, the argument that small carriers can substitute for them—even in a world of modern technology—is unproven.⁶⁶ They certainly could not during World War II, nor in subsequent naval operations. V/STOL aircraft remain a less-capable substitute for conventional carrier aircraft.⁶⁷ One can speculate regarding the damage a People's Liberation Army DF-21 missile might effect if it struck a large carrier—but first it would have to hit it, which would be far from certain in a war characterized by deception and a struggle for use of the electromagnetic environment.⁶⁸ A small carrier, if struck, is less likely to survive. Again, this was demonstrated in World War II.

The third point is that, in the end, the debate over aircraft carriers always boils down to cost. Their acquisition costs are much higher than for other ships and other single-item defense programs, making them a natural target for criticism. Yet that always has been true. The conversion costs of *Lexington* and *Saratoga* were estimated initially at \$21 million each, but their final costs were \$40 million apiece—a nearly 90 percent cost overrun. And yes, there were a lot of screaming critics at the time—including congressmen. Combined with a simplistic perception of vulnerability, high costs tend to cause critics to declare aircraft carriers “unaffordable” and “vulnerable.”⁶⁹ However, it is very fair to ask—as former Secretary of the Navy John F. Lehman and Steven Wills phrase the question—“Compared to what?”⁷⁰

As Norman Friedman writes, “The belief that somehow the aviation community and the carrier designers are conspiring to hide the real advantages of smaller and less expensive carriers persists to this day.”⁷¹ However, small does

not inevitably prove to be less expensive. An interesting acquisition case study would be to investigate whether the total spent (for ships, modules, and required developmental programs) of the Littoral Combat Ship program—in which ships already are starting to be decommissioned—would have bought one carrier or two (particularly if, as Lehman and Wills propose, they were the size of a non-nuclear USS *Midway*).⁷²

Likewise, instead of proposing only to reduce the carrier force to fund other defense programs, it is logical and analytically sound to ask which programs could be reduced or eliminated to fund carriers—especially if we are firm in our desire to avoid another Afghanistan-type commitment and to adjust our defense resources accordingly. After all, aircraft carriers are combat-proven systems, while their vulnerability to modern military technology remains unproven.⁷³

To suggest a more thorough study of alternatives that includes a fair hearing for high capabilities as well as lesser ones does not necessarily represent unqualified support for large aircraft carriers.⁷⁴ On the other hand, neither does it mean they should be rejected summarily.

A POSTSCRIPT: DID THE PLAN CONSIDER THE FLYING-DECK CRUISER—AND REJECT IT?

The first People's Liberation Army Navy (PLAN) aircraft carrier, the ex-Soviet Navy *Varyag* (now *Liaoning*), ostensibly was purchased by a “private” People's Republic of China (PRC) company for conversion into a floating casino; it never became a casino. That is a story well known.⁷⁵ A second carrier was built to the same specifications. The third (and larger) carrier now under construction is an attempt to incorporate new technologies developed for the latest U.S. carrier, such as the electromagnetic aircraft launch system (i.e., EMALS).⁷⁶

Less known is the fact that PRC companies also purchased two of the four ex-Soviet *Kiev*-class heavy-aviation cruisers, ostensibly as theme-park attractions. Neither was particularly successful in that intended role. The first (ex-*Kiev*) later was converted into a “luxury” hotel (reported to be near insolvency, having failed to attract sufficient guests).⁷⁷ The second (ex-*Minsk*), with its parent theme park failing, was acquired by the PRC government in 2016 for display in a naval museum in Jiangsu.⁷⁸

It is not unreasonable to ponder whether these flying-deck cruisers were purchased as speculative private ventures with the hope that they (like *Varyag*) would be purchased, in turn, by the PLAN. The incongruous nature of their “private” acquisition—which included the cost of towing two poorly maintained large hulks to China to be massively refurbished for use in a relatively low-revenue industry—primes this speculation. Although there is no available documentation, it is very logical that they were examined (to some extent) as potential additions to

the PLAN fleet but were rejected. Perhaps the repair, upgrading, and conversion costs were seen as too great. The mission for which they were built—defense of the Soviet nuclear-ballistic-missile submarine bastions—is not a PLAN mission (as far as we know).

Or perhaps, like the United States in the 1930s, the PRC has determined that larger, all-aviation ships are a superior (in fact, the most desirable) method for bringing airpower to sea.

NOTES

1. For a “realist’s” reflection on the motives behind the Washington Naval Conference on its hundredth anniversary, see Kori Schake, *Safe Passage: The Transition from British to American Hegemony* (Cambridge, MA: Harvard Univ. Press, 2017), pp. 235–53. For an assessment of the conference and resulting treaty as an arms-control process, see Emily O. Goldman, *Sunken Treaties: Naval Arms Control between the Wars* (University Park: Pennsylvania State Univ. Press, 1994).
2. Thomas H. Buckley, “The Icarus Factor: The American Pursuit of Myth in Naval Arms Control, 1921–36,” in *The Washington Conference, 1921–22: Naval Rivalry, East Asian Stability and the Road to Pearl Harbor*, ed. Erik Goldstein and John Maurer (London: Frank Cass, 1994), pp. 126–27.
3. SALT refers to Strategic Arms Limitation Talks (1969–79); START refers to Strategic Arms Reduction Talks (1982–91), with variations in the form of START II (1992–2000) and New START (2011). In between was SORT (Strategic Offensive Reductions Treaty, 2002). Sources that emphatically associate the Washington Naval Conference with Cold War efforts at arms control are Coit D. Blacker and Gloria Duffy, *International Arms Control: Issues and Agreements* (Stanford, CA: Stanford Univ. Press, 1984), pp. 81–93; Barry M. Blechman et al., eds., *Naval Arms Control: A Strategic Assessment* (New York: St. Martin’s, 1991); and Robert Gordon Kaufman, *Arms Control during the Pre-nuclear Era: The United States and Naval Limitation between the Two World Wars* (New York: Columbia Univ. Press, 1990). A more skeptical view of the association is Sam J. Tangredi, “Naval Strategy and Arms Control,” *Washington Quarterly* 14, no. 3 (Summer 1991), pp. 201–209.
4. There are numerous sources that explain the ratio and details of the treaty, of which Goldman’s *Sunken Treaties* is but one. The definitive source for official U.S. documents concerning the conference and treaty is Joseph V. Fuller, ed., 1921, *Foreign Relations of the United States* (Washington, DC: U.S. Government Printing Office, 1936), vol. 1, docs. 28–101, available at history.state.gov/.
5. Britain had laid the keel for its first purpose-built carrier, HMS *Hermes*, before imperial Japan started construction; however, *Hosho* was launched first. See Kathrin Milanovich, “*Hôshô*: The First Aircraft Carrier of the Imperial Japanese Navy,” in *Warship 2008*, ed. John Jordan (London: Conway, 2008), pp. 9–25. Chesneau takes issue with *Hosho* being proclaimed the first purpose-built carrier in Roger Chesneau, *Aircraft Carriers of the World, 1914 to the Present* (Annapolis, MD: Naval Institute Press, 1984), p. 157.
6. Norman Friedman, *U.S. Aircraft Carriers: An Illustrated Design History* (Annapolis, MD: Naval Institute Press, 1983), p. 37. However, the United States included *Langley* in the total aircraft carrier tonnage allocation following passage of the 1934 Vinson-Trammell Act. In 1936, *Langley* was converted into a seaplane tender. Since *Hosho* was under 10,000 tons, it was not regulated as an aircraft carrier.
7. William F. Trimble, *Admiral William A. Moffett: Architect of Naval Aviation* (Washington, DC: Smithsonian Institution, 1994), p. 97; Charles M. Melhorn, *Two-Block Fox: The Rise of the Aircraft Carrier, 1911–1929* (Annapolis, MD: Naval Institute Press, 1974), p. 98;

- Goldman, *Sunken Treaties*, p. 174. Goldman notes that prior to the Washington Treaty “every naval building program since 1918 submitted by the General Board to Congress had included one or more carriers, and none had been authorized.”
8. Melhorn, *Two-Block Fox*, p. 98. A detailed analysis of the Washington Treaty’s actual effect on the size and capabilities of the U.S. Navy is Thomas C. Hone, “The Effectiveness of the ‘Washington Treaty’ Navy,” *Naval War College Review* 32, no. 6 (November–December 1979), pp. 35–59, available at www.jstor.org/.
 9. Both ships eventually came to 36,000 tons displacement. However, there was a clause in the treaty that allowed for 3,000 tons to be added to capital ships (battleships) for additional protection against submarines (reflecting on German submarine operations in World War I). The United States successfully argued (or at least justified to itself) that this addition also applied to aircraft carriers. Friedman, *U.S. Aircraft Carriers*, p. 43. Goldman considers this to have constituted a violation of the treaty. Goldman, *Sunken Treaties*, p. 173.
 10. Friedman, *U.S. Aircraft Carriers*, pp. 48–49. Badly damaged in the Battle of the Coral Sea in 1942, *Lexington* required five torpedo hits to scuttle. As a target ship in 1946, *Saratoga* was sunk in a second atomic bomb test, having survived the first.
 11. Admittedly, it is anachronistic to use the term *supercarrier* for that era, it first being used in the late 1940s. However, it is apt for comparing *Lexington* and *Saratoga* with the preceding *Langley* and the follow-on *Ranger* (CV 4). The “super carrier” term came in vogue with the debate over the proposed USS *United States* in 1949. It subsequently has been applied to the *Forrestal*-class and follow-on carriers. An example is Andrew Faltum, *The Supercarriers: The Forrestal and Kitty Hawk Classes* (Annapolis, MD: Naval Institute Press, 2014).
 12. On Moffett changing his mind several times on this issue, see Melhorn, *Two-Block Fox*, pp. 108–10.
 13. Trimble, *Admiral William A. Moffett*, p. 212. A discussion of Moffett’s view on flight decks is in Edward Arpee, *From Frigates to Flat-Tops: The Story of the Life and Achievements of Rear Admiral William Adger Moffett, U.S.N., the “Father of Naval Aviation”; October 31, 1869–April 4, 1933* (Chicago: Lakeside, 1953), pp. 150–51.
 14. Melhorn, *Two-Block Fox*, p. 111. Melhorn uses the term “tactically sound” to describe the 13,800-ton CVs.
 15. Thomas Wildenberg, *All the Factors of Victory: Adm. Joseph Mason Reeves and the Origins of Carrier Airpower* (Annapolis, MD: Naval Institute Press, 2003), pp. 212–13; Trimble, *Admiral William A. Moffett*, pp. 210–11.
 16. Trimble, *Admiral William A. Moffett*, p. 217.
 17. In her study of the Washington Naval Treaty, Goldman suggests that there was another “loophole” the Navy could have used to increase the number of flight decks. She points out that the treaty defined an aircraft carrier as “a vessel of war in excess of 10,000 tons standard displacement, designed for the specific and exclusive purpose of carrying aircraft.” Ipso facto, any ship less than 10,000 tons, even if it was all flight deck, still would not be an “aircraft carrier” and would be restricted by neither the carrier limits nor the cruiser limits. Whether this ever occurred to the USN leadership (it appears it did not), Goldman concedes that “at the time it was not deemed feasible to construct a carrier of 10,000 tons or less.” Goldman, *Sunken Treaties*, p. 175.
 18. Trimble, *Admiral William A. Moffett*, p. 254.
 19. Ibid., pp. 210, 224. For a more detailed (and nuanced) understanding of the Navy General Board, see John T. Kuehn, *Agents of Innovation: The General Board and the Design of the Fleet That Defeated the Japanese Navy* (Annapolis, MD: Naval Institute Press, 2008), and John T. Kuehn, *America’s First General Staff: The Rise and Fall of the General Board of the U.S. Navy, 1900–1950* (Annapolis, MD: Naval Institute Press, 2017).
 20. Between the Washington and London Conferences, the Geneva Naval Conference of 1927 ended without agreement.
 21. Trimble, *Admiral William A. Moffett*, pp. 210, 225.
 22. They were Reps. James V. McClintic (D-OK) and Carl Vinson (D-GA). Ibid., pp. 210, 225–26.

- Vinson served for many years as chairman of the House Naval Affairs Committee and, later, the House Armed Services Committee. He was the namesake of USS *Carl Vinson* (CVN 70).
23. *Ibid.*, pp. 98–99.
 24. A contemporary history of the LAMPS program can be drawn from R. E. Hammond [Lt. Cdr., USN] and Pat Tierney [Lt., USN], “The LAMPShip Team,” U.S. Naval Institute *Proceedings* 104/3/901 (March 1978), available at www.usni.org/; Dan Manningham, “LAMPS III,” U.S. Naval Institute *Proceedings* 104/3/901 (March 1978), available at www.usni.org/; George Galdorisi [Capt., USN], “Tuning on LAMPS III,” U.S. Naval Institute *Proceedings* 112/10/1,004 (October 1986), available at www.usni.org/; George Galdorisi [Capt., USN] and Jim Stavridis [Cdr., USN], “Ship-Helo Team Key to New Strategy,” U.S. Naval Institute *Proceedings* 120/1/1,091 (January 1994), available at www.usni.org/; and George Galdorisi [Capt., USN (Ret.)] and Scott C. Truver, “Helicopter Procurement: Playing with Fire,” U.S. Naval Institute *Proceedings* 133/9/1,255 (September 2007), available at www.usni.org/. On DASH, see Thomas Pinney [Capt., USN (Ret.)], “UAVs: Before Fire Scout There Was DASH,” U.S. Naval Institute *Proceedings* 144/8/1,386 (August 2018), available at www.usni.org/.
 25. A discussion of small carriers designed for helicopters for use in ASW and sea control is R. H. Klipjgert [Lt. Cdr., USN], “Sea Control Aircraft: The Case for the Chopper,” U.S. Naval Institute *Proceedings* 101/4/866 (April 1975), available at www.usni.org/.
 26. Many of these proponents have been naval officers (and officers from other services) who have debated in the pages of the U.S. Naval Institute *Proceedings* over the years. See, for example, John B. Kusewitt Jr. [Lt. Col., USA], “The Future of Navy VTOL Systems,” U.S. Naval Institute *Proceedings* 99/9/847 (September 1973), pp. 25–35.
 27. Wildenberg, *All the Factors of Victory*, pp. 1–10; James H. Belote and William M. Belote, *Titans of the Seas* (New York: Harper and Row, 1975), pp. 18–19.
 28. Clark G. Reynolds, *The Fast Carriers: The Forging of an Air Navy* (Huntington, NY: Krieger, 1978), p. 18.
 29. Wildenberg, *All the Factors of Victory*, pp. 155–56.
 30. Friedman, *U.S. Aircraft Carriers*, pp. 75–77.
 31. A short but harsh reflection on *Ranger* from one of its former aviators is James S. Russell [Adm., USN (Ret.)], “The *Ranger*: Atavistic Anomaly,” in “A Salute: The Diamond Jubilee of Naval Aviation,” supplement, U.S. Naval Institute *Proceedings* 112/4/998 (April 1986), pp. 52–53.
 32. Belote and Belote, *Titans of the Seas*, pp. 133–34. For details on *Ranger* in TORCH, see Vincent P. O’Hara, *TORCH: North Africa and the Allied Path to Victory* (Annapolis, MD: Naval Institute Press, 2015), pp. 193–94.
 33. Friedman, *U.S. Aircraft Carriers*, p. 76.
 34. *Ibid.*, p. 59.
 35. Trimble, *Admiral William A. Moffett*, p. 226. Trimble also states (p. 15) that “he [Moffett] had to admit that the small carrier was more attractive in theory than in practice.”
 36. Even Goldman states bluntly, “The *Ranger* proved wholly ineffective during World War II.” Goldman, *Sunken Treaties*, p. 161.
 37. Once again, the pre–World War II Navy was always reluctant to divest itself of legacy systems. It viewed mass and numbers as critical in light of the inevitable attrition of war fighting. In World War II, *Wasp* operated briefly in the Mediterranean, then was shifted to the Pacific, where it was sunk in 1942. Designed with limited underwater protection—to save size, weight, and cost—it could not survive torpedo attack. Belote and Belote, *Titans of the Seas*, pp. 156–57.
 38. For a comparison of USS *Independence* (CVL 22) with its larger *Essex*-class companions, see *ibid.*, pp. 202–203.
 39. These hulls were much smaller than those of battle cruisers, which were much closer to battleships in size. Friedman, *U.S. Aircraft Carriers*, p. 160. A concise comparison between the CV and CVL is at Belote and Belote, *Titans of the Seas*, pp. 202–204.
 40. Belote and Belote, *Titans of the Seas*, pp. 215–16.
 41. Chesneau, *Aircraft Carriers of the World*, p. 233.
 42. The definitive work on CVEs remains William T. Y’Blood, *The Little Giants: U.S. Escort*

Carriers against Japan (Annapolis, MD: Naval Institute Press, 2012).

43. This figure depends on how one counts the preceding “mobilization carriers” (AVGs) and those completed but not commissioned or only partly completed.
44. Additionally, Navy squadrons and orphaned aircraft that could not return to their carriers also flew from Marine airfields. Barrett Tillman, *On Wave and Wing: The 100-Year Quest to Perfect the Aircraft Carrier* (Washington, DC: Regnery History, 2017), pp. 116–17.
45. Samuel Eliot Morison, *History of United States Naval Operations in World War II*, vol. 12, *Leyte: June 1944–January 1945* (Boston: Little, Brown, 1958), p. 316.
46. An article that lauds the CVLs as representing innovative thinking that should be emulated today is Andrew Rucker [Lt. Cdr., USN], “The Little Carriers That Could,” *U.S. Naval Institute Proceedings* 147/6/1,420 (June 2021), pp. 53–57.
47. Friedman, *U.S. Aircraft Carriers*, pp. 365–69. USS *Princeton* (CV 23) also was converted, as were several CVEs. USS *America* (LHA 6) sometimes is referred to as “the lightning carrier” because it carries the F-35B (V/STOL variant) Lightning II. It is not considered a “light carrier” by the U.S. Navy.
48. One of the best discussions is in Jeffrey G. Barlow, *Revolt of the Admirals: The Fight for Naval Aviation, 1945–1950* (Washington, DC: Naval Historical Center, 2001).
49. Friedman, *U.S. Aircraft Carriers*, pp. 256–57.
50. See, for example, Pete Pagano [Capt., USN (Ret.)], “The CVLs Time Has Come,” *U.S. Naval Institute Proceedings* 147/9/1,423 (September 2021), pp. 12–13.
51. An argument in favor of using amphibious assault ships as light carriers is Jonathan D. Caverley and Sam J. Tangredi [Capt., USN (Ret.)], “Amphibs in Sea Control and Power Projection,” *U.S. Naval Institute Proceedings* 144/4/1,382 (April 2018), pp. 18–22, available at www.usni.org/.
52. Norman Friedman reports: “The Naval Ship Engineering Center . . . developed about fifty alternative VSTOL support ships (VSS) [plans] between November 1974 and December 1975.” Friedman, *U.S. Aircraft Carriers*, p. 354.
53. A concise discussion of the logic behind the sea-control ship is John L. Canaday [Lt. Cdr., USN], “The Small Aircraft Carrier: A Re-evaluation of the Sea Control Ship” (master’s thesis, U.S. Army Command and General Staff College, 1990), pp. 11–23.
54. Elmo R. Zumwalt Jr., *On Watch: A Memoir* (New York: Quadrangle / New York Times Book, 1976), pp. 75–77; Friedman, *U.S. Aircraft Carriers*, p. 354.
55. Friedman, *U.S. Aircraft Carriers*, p. 324.
56. Critics have not been exclusively civilians; many have been naval officers who also have debated in the pages of the U.S. Naval Institute *Proceedings* over the years. See, for example, Stephen T. DeLaMater [Capt., USN (Ret.)], “The Carrier,” *U.S. Naval Institute Proceedings* 102/10/884 (October 1976), pp. 66–74.
57. Friedman, *U.S. Aircraft Carriers*, p. 323. Friedman explains: “If a VSTOL carrier attacked shore targets, it would be able to project only a small fraction of the weight of ordnance a conventional air group could move. To achieve a like level of destruction, several small carriers, costing perhaps several times as much as a single large-deck unit, might be required.”
58. This has been recognized throughout the debate on V/STOL carriers. See, for example, James L. George [Lt., USN (Ret.)], “The V/STOL Catch 22s,” *U.S. Naval Institute Proceedings* 104/4/902 (April 1978), pp. 22–29.
59. Defense Science Board, *Future of the Aircraft Carrier* (Washington, DC: Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics, October 2002), p. 46. The report gently states that an all-V/STOL carrier would “require legacy aircraft support (E-2C, EA-6B, E-JSF), new sea-based support aircraft, or joint assets.”
60. Eric Grove, *The Future of Sea Power* (Annapolis, MD: Naval Institute Press, 1990), p. 142–44.
61. Friedman, *U.S. Aircraft Carriers*, p. 324.
62. Michael A. Cairl, “Through-Deck Cruiser: The New Capital Ship,” *U.S. Naval Institute Proceedings* 104/12/910 (December 1978), pp. 34–42.
63. Chesneau, *Aircraft Carriers of the World*, pp. 192–95.

64. The prominence of this Soviet mission only became clear in the 1980s. See Christopher Ford and David Rosenberg, *The Admirals' Advantage: U.S. Navy Operational Intelligence in World War II and the Cold War* (Annapolis, MD: Naval Institute Press, 2005), pp. 82–87.
65. Even when examining options, future missions, and doctrine for aircraft carriers, the argument remains that “nonnuclear ships under about eighty thousand tons sacrifice too much total combat capability to be worthwhile investments as aircraft carriers.” Robert C. Rubel, “The Future of Aircraft Carriers,” *Naval War College Review* 64, no. 4 (Autumn 2011), p. 25, available at digital-commons.usnwc.edu/.
66. Bradley Martin and Michael McMahon, *Future Aircraft Carrier Options* (Santa Monica, CA: RAND, 2017), p. 48, available at www.rand.org/.
67. Pagano, “The CVLs Time Has Come,” p. 13.
68. The costs of DF-21s and CVs have been compared frequently. An example is Henry J. Hendrix, *At What Cost a Carrier?* (Washington, DC: Center for a New American Security, March 2013), available at www.cnas.org/.
69. Such critiques circulate through the media and build mass through repetition. The “unaffordable” and “vulnerable” assessments have been repeated widely in media ranging from popular science magazines to investment websites, most citing the same sources. See, for example, Kyle Mizokami, “Are We Nearing the End of the Supercarrier?,” *Popular Mechanics*, 12 March 2020, www.popularmechanics.com/, and Gillian Rich, “This Icon of U.S. Power Is More Sinkable Than Ever but Hard to Kill Off,” *Investor's Business Daily*, 31 January 2020, www.investors.com/.
70. John F. Lehman, with Steven Wills, *Where Are the Carriers? U.S. National Strategy and the Choices Ahead* (Philadelphia: Foreign Policy Research Institute, 2021), p. 49.
71. Friedman, *U.S. Aircraft Carriers*, p. 323.
72. For a devastating critique of the Littoral Combat Ship midway in the program, see John Patch [Cdr., USN (Ret.)], “The Wrong Ship at the Wrong Time,” U.S. Naval Institute *Proceedings* 137/1/1,295 (January 2011), available at www.usni.org/. Any study of the LCS should begin with Ronald O'Rourke's series of Congressional Research Service reports, with their extensive citations. The latest version is available at crsreports.congress.gov/.
73. This point is made in Lehman, *Where Are the Carriers?*, pp. 49–64.
74. Again, these debates have happened within the Navy. See Reuven Leopold, “Designing the Next Aircraft Carriers,” U.S. Naval Institute *Proceedings* 103/12/898 (December 1977), pp. 33–39. As the technical director for ship design at the Naval Ship Engineering Center, Leopold was the top naval ship designer of the 1970s.
75. A detailed source is Minnie Chan, “The Inside Story of the *Liaoning*: How Xu Zengping Sealed Deal for China's First Aircraft Carrier,” *South China Morning Post*, 19 January 2015, www.scmp.com/.
76. Matthew Funairole, Joseph S. Bermudez, and Brian Hart, “China's Third Aircraft Carrier Takes Shape,” *Center for Strategic and International Studies Commentary*, 15 June 2021, www.csis.org/.
77. If one would like to book a reservation, the website is www.uniqhotels.com/binhai-aircraft-hotel/.
78. “Former Soviet Aircraft Carrier Sold in China for \$16mln,” *Sputnik International*, 31 May 2006, sputniknews.com/.

SEOUL'S MISGUIDED DESIRE FOR A NUCLEAR SUBMARINE

James Campbell

In 2017, President Moon Jae-in endorsed the development and acquisition of a nuclear submarine for the Republic of Korea (ROK—South Korea). South Korean proponents of nuclear submarines favor the program for two technical reasons. First, nuclear submarines can stay underwater for months, rather than the days or weeks of which conventional diesel-electric submarines are capable. Second, nuclear submarines can maintain speeds of up to forty knots at depth, whereas nonnuclear submarines have difficulty sailing much above twenty knots at depth for any significant duration, and must surface frequently to recharge their batteries—which makes them easier to detect. These two attributes, South Korean nuclear-submarine proponents argue, make nuclear submarines ideal for detecting and neutralizing the ballistic-missile submarines of the Democratic People's Republic of Korea (DPRK—North Korea).¹

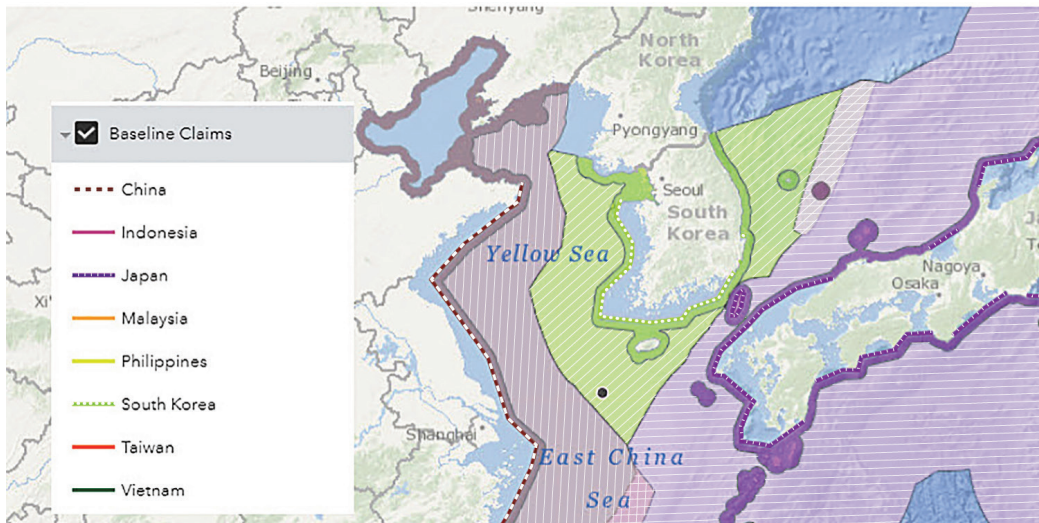
Since Moon's 2017 endorsement, South Korean interest in developing an indigenously designed nuclear submarine only has grown. Recent press reports indicate the intention of the ROK Navy (ROKN) to modify three KSS-III submarines (of the *Dosan Ahn Chang-ho* class) into four-thousand-ton nuclear-powered submarines.²

Doing so would constitute a major commitment. Not only would the addition

James Campbell is the lead yard production manager in the Arleigh Burke Program Office at the Naval Sea Systems Command. He received the Missouri State / National Defense University master's degree in defense and strategic studies / countering weapons of mass destruction, among other academic degrees.

of nuclear power to the final three submarines in the class impact the defense budget severely, but South Korea also would have to find a reliable, long-term fuel supplier. South Korea has nuclear-fuel purchase agreements with the United States, but for civilian applications only. In press reports, unnamed military sources assert that once the

FIGURE 1
NATIONAL CLAIMS TO SEA-LANES IN NORTHEAST ASIA



Source: Terence Roehrig, "South Korea: The Challenges of a Maritime Nation," *National Bureau of Asian Research*, 23 December 2019, www.nbr.org/.

United States agrees to supply low-enriched uranium for naval use, the development process will be a breeze.³ This claim glosses over the complexities associated with and the many difficulties involved in building nuclear submarines.

Acquiring nuclear submarines would dictate the establishment of a dedicated line of funding that would affect other ROKN programs—a significant trade-off. This immediately raises the question of the relevance of nuclear submarines' general operational advantages to South Korea's specific needs, since the regional waters in which its navy operates are relatively shallow. In addition, South Korea must consider the legal aspects of promoting a nuclear-submarine program. Can the Moon administration negotiate with nuclear-fuel suppliers to acquire the necessary enriched fuel to power a nuclear-submarine fleet? South Korea likely would have to renegotiate the existing South Korean–U.S. "123 agreement" if it is to use purchased, enriched fuel for military purposes.⁴

Given the pros and cons of acquiring nuclear submarines, South Korea should consider alternatives. The ROKN is updating its surface and underwater fleets with highly capable antisubmarine warfare (ASW) systems. The ROK can rely on the United States to support state-of-the-art airborne ASW assets to enhance the ROKN's capabilities to detect, track, and, if necessary, prosecute hostile sub threats. The Moon administration may seek to create and foster cooperative ASW agreements with Japan, the United States, or both. Given its highly technical economy, South Korea might invest in technologies—drones, lasers, magnetic-anomaly detection, artificial intelligence (AI)—that could enhance all facets of

ASW. Nuclear submarines' high costs would permit acquisition of a very limited number of them, whereas the same money could purchase substantially greater nonnuclear ASW capabilities. Finally, nuclear submarines typically operate as ASW platforms, whereas the alternative surface and air assets can perform multiple missions beyond ASW.

THE EVOLVING NORTH KOREAN THREAT

North Korea left the Nonproliferation Treaty in 2003 and tested its first nuclear weapon in 2006. Between 2009 and 2016, the Kim regime tested four additional nuclear devices, then announced that the final one had been a thermonuclear device with an estimated 250-kiloton yield. Throughout the testing period, North Korea continued to refine its nuclear warhead miniaturization to enable integration onto a missile.⁵

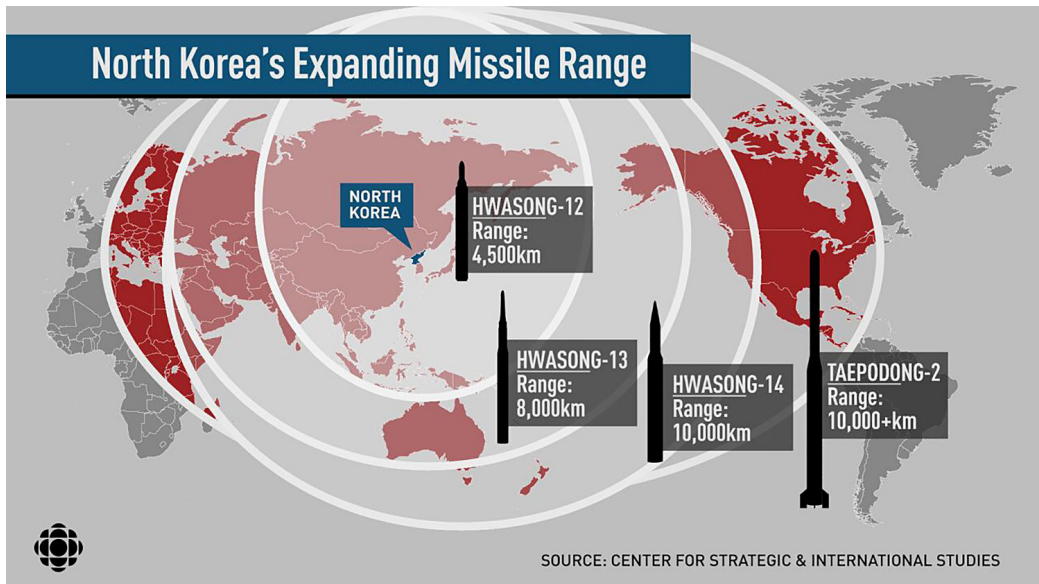
As the Kim regime refined its nuclear-warhead designs, it also developed more-capable missiles, including intercontinental ballistic missiles (ICBMs). Under the guise of a peaceful space-launch-vehicle program, the DPRK eventually developed and tested the Hwasong-15 ICBM. The Hwasong-15, with a range of nearly thirteen thousand kilometers (km), can threaten the entire

FIGURE 2
TEST LAUNCH OF HWASONG-15 ICBM



Source: "Hwasong-15 (KN-22)," *Missile Threat: CSIS Missile Defense Project*, 7 December 2017, missilethreat.csis.org/.

FIGURE 3
ESTIMATED RANGES OF DPRK MISSILES



Source: Nicole Mortillaro, "'Just a Matter of Time': North Korea's Missile Capabilities May Be Closer Than Once Thought," *CBC*, 30 November 2017, www.cbc.ca/.

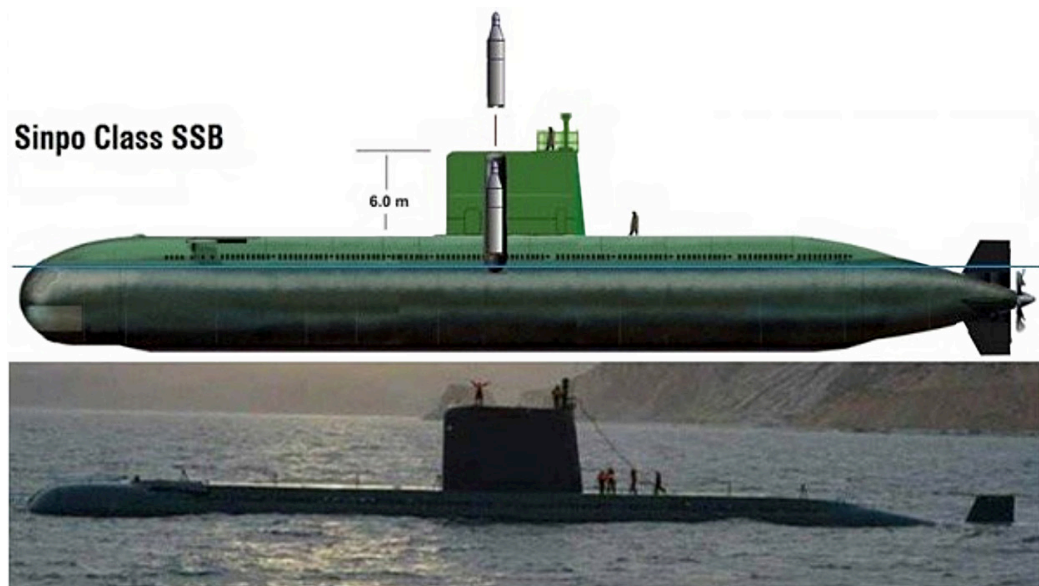
continental United States. After the successful testing of the Hwasong-15, North Korean state media claimed that the country had “finally realized the great historic cause of completing its nuclear force.”⁶ The inference is that the United States, not South Korea, is the deterrence objective of these strategic-weapon systems.

North Korea's supplement to land-based nuclear missiles has been its development of submarine-launched ballistic missiles (SLBMs). In 2015, it began testing its SLBMs, culminating in the launching of four missiles in 2016. After a hiatus of three years, in 2019 North Korea launched a new-generation SLBM, the Pukguksong-3, with a range of 1,900 km.⁷

North Korea possesses a submarine fleet of over seventy vessels, but most are of relatively obsolete designs from the late 1950s to the mid-1960s. Construction of North Korea's first indigenous missile submarine, the Sinpo class, wrapped up in late 2014. However, the base design is still relatively antique compared with current attack submarines available to South Korea and Japan. South Korean analysis indicates that the Sinpo-class missile submarine may have just one vertical-launch tube for SLBMs.⁸ And while North Korea does possess missile submarines, it still must master the challenge of ejecting and launching an SLBM from an operational submarine.

North Korean short- and intermediate-range missiles already accomplish deterrence against any South Korean incursion or attempt to eliminate the

FIGURE 4
DPRK SINPO-CLASS BALLISTIC-MISSILE SUBMARINE



Source: Sy Gunson, "Is the West Coast of the United States Vulnerable to North Korean Submarines Carrying Nuclear Weapons?," *Quora*, n.d., www.quora.com/.

Kim regime. The addition of ICBM and SLBM capabilities represents a deterrent aimed not at South Korea but at the United States. Thus, for South Korea, a nuclear-powered submarine is an unnecessary luxury, not a clear military requirement.

THE SOUTH KOREAN NUCLEAR-SUBMARINE ANSWER

South Korean nuclear-submarine proponents claim that nuclear submarines are the most effective counter against a nuclear-capable missile submarine from the DPRK or any other hostile state. The South Korean press has reported that the proposed South Korean nuclear-submarine fleet would consist of a minimum of three boats. The belief is that having three will guarantee the capability to keep at least one at sea continuously.⁹

The cost estimates for the three submarines plus their supporting infrastructure approach \$9 billion, excluding operating costs.¹⁰ For fiscal year 2020, the South Korean defense budget totaled approximately \$41.3 billion, of which \$13.7 billion was set aside for arms purchases.¹¹ South Korea already has begun to over-emphasize the advantages of nuclear-powered submarines to justify spending so much on the program (see sidebar).

Retired ROKN captain Moo Keun-sik claims that basic designs for the submarine and a miniaturized nuclear reactor were completed during the "326 initiative."¹² This was a secret development program started in 2003 but shut down

Nuclear-Powered Submarine Advantages

The greatest advantage the nuclear submarine offers is its ability to remain underwater and on station for months at a time without surfacing; in fact, a nuclear submarine can stay submerged for its entire deployment. It never needs to surface to recharge batteries, as a diesel-electric submarine must do periodically. The only time the nuclear submarine must near the surface is for critical communications between the submarine and higher authorities.

ROKN nuclear submarines could use either low-enriched uranium (LEU) or high-enriched uranium (HEU) fuel. If the submarine is LEU fueled, its operational period generally encompasses five to ten years without refueling. The ROK design could incorporate features like those of French nuclear submarines, which refuel with 6 percent LEU every ten years.

If the nuclear submarine is HEU fueled, the option exists for the entire nuclear-submarine fleet never to require refueling, which is a complex and time-consuming operation. However, the drawbacks are a dramatic increase in the cost per ship and the substantial proliferation risks associated with weapon-grade fuel.

Regardless of the type of nuclear fuel used, the limiting factor for the nuclear submarine is crew endurance; while the nuclear submarine can provide fresh water and oxygen, it must return to port to replenish food stores. To increase the operational tempo of the nuclear-submarine fleet, the ROKN could employ the USN nuclear-missile-submarine doctrine of two independent crews per ship. This enables the ship to spend a greater amount of time at sea and the crews to recover from a highly stressful job.

The nuclear submarine's ability to transit long distances at high speed permits the boat to meet far-flung operational needs. Britain's Royal Navy (RN) used this feature to great effect during the Falklands War. The RN nuclear submarines had to traverse the length of the Atlantic in a timely manner to establish a sea-denial zone against any Argentine navy interference with British naval vessels attempting to land ground forces. This illustrated that the nuclear submarine can project force anywhere on the globe; however, unlike those of the United Kingdom and the United States, the ROK government does not have far-flung possessions or allies it must protect.

A major technical advantage the nuclear submarine possesses over the diesel-electric boat is its available electrical power for warfare systems. The nuclear submarine provides a constant source of electrical power that will not diminish over time, unlike the battery bank of a diesel-electric boat during submerged operations. This power source enables the nuclear submarine to maintain all sensors for detecting and tracking hostile submarines. The associated penalty is a submarine of greater size and complexity than the diesel-electric boat. The reactor compartment requires additional space and increased buoyancy to counteract reactor weight.

The nuclear submarine's advantages in extended underwater operations, available power density, technical prestige, and operational tempo make it suited for worldwide operations—but the ROKN's area of operations is regional, not global.

after it was exposed to the International Atomic Energy Agency and the Korean public. Captain Moo's projections seem overly optimistic, considering that basic designs for USN submarines take up to four years to create, with an additional nine years needed to complete the detailed design.¹³ "Five years is the minimum time frame to complete South Korea's first nuclear-powered submarine, even with outside assistance, naval experts project"; even this counts only production, not actual entry into service.¹⁴ Yet how long it might take Seoul to acquire nuclear submarines is perhaps the least of the problems its submarine-acquisition effort faces.

SOUTH KOREAN OBSTACLES TO A NUCLEAR SUBMARINE

Assuming the ROKN's acquisition price (without supporting infrastructure) is between \$1.6 and \$2.5 billion for each proposed nuclear submarine, Seoul may need as much as \$7.5 billion to build just three submarines. However,

operationally the navy will need as many as nine nuclear submarines to protect its regional sea-lanes, as it cannot deploy all its submarines simultaneously; generally, at any one time half of a submarine fleet is undergoing maintenance, crew rest, and retraining—activities separate from tracking adversary submarines.

Thus, a realistic nuclear-submarine fleet for South Korea would be six to nine submarines. That could cost as much as \$22.5 billion. The Moon administration's planned budget for 2019 was approximately \$415 billion, which included nearly \$42 billion in defense spending. Money spent acquiring nuclear submarines might be spent better on missile defense, air forces, ground forces, or reinvestment in the national economy.¹⁵

More important, South Korea will need to overcome several additional structural barriers to build its nuclear submarines.

Shipbuilding Infrastructure

South Korea is the number one shipbuilder in the world, but that is of civilian ships, not warships. Adding a nuclear-submarine program to the ROK defense budget would require additional workers trained in the design, development, and production of these highly complex vessels. In addition, the shipbuilder would have to isolate and secure construction facilities dedicated solely to the nuclear-submarine program, to ensure the security of the related nuclear technology and materials.

The major shipbuilders in Korea are Daehan Shipbuilding, Samsung Heavy Industries, Daewoo Shipbuilding & Marine Engineering (DSME), and Hanjin Heavy Industries & Construction (HHIC). Of these four, only DSME and HHIC build military vessels, and both build military and civilian vessels in the same shipyards. Currently, DSME is constructing the ROKN's conventionally powered submarines.¹⁶

South Korea would require dedicated port facilities for its proposed nuclear-submarine fleet. The ROKN could convert existing harbor facilities or develop a new site. Either way, the Moon administration will require infrastructure funding in addition to the submarine-construction funding.

Design and Construction

South Korean shipbuilders also must develop the design parameters for marrying a nuclear reactor with a submarine hull. Toward this end, designers will need educational facilities to teach nuclear-reactor operations and design. The U.S. Navy has identified the following eight characteristics as being critical to submarine design.

1. Compactness: Reactor must fit within the space and weight constraints of a warship, leaving room for weapons and crew, yet be powerful enough to drive the ship at tactical speeds for engagement or rapid transit to an operating area.

2. Crew protection: Crew lives and works for months at a time in close proximity to the reactor.
3. Public Safety: Ship makes calls into populated ports throughout the world. Maintaining national and international acceptance demands the most conservative engineering and operational approach toward assuring safety of the public.
4. Reliability: Ship requires continuous propulsion and electrical power to be self-sufficient in a hostile and unforgiving environment—undersea, under ice, in combat.
5. Ruggedness: Reactor must tolerate ship's motion and vibration, and withstand severe shock under battle conditions.
6. Maneuverability: Ship may require rapid and frequent power changes to support tactical maneuvering.
7. Endurance: Reactor must operate many years between refuelings, ideally for the life of the ship, to minimize life-cycle cost, minimize demand on support infrastructure, minimize occupational radiation exposure, and maximize ship availability to the fleet for service at sea.
8. Quietness: Submarines must be extremely quiet to minimize the threat of acoustic detection and to be able to detect other ships.¹⁷

To field a capable nuclear-submarine fleet, South Korean designers would have to address each of these characteristics equally and become proficient in them. To quote a 1995 report from the USN reactor-design community, "Failing to satisfy any of [these requirements] would make the reactor unusable in the ship, or would compromise the safety and survivability of the ship and its ability to carry out its mission," potentially putting the crew in danger.¹⁸

The warfare systems incorporated within a nuclear submarine should integrate seamlessly with the ROKN's current diesel-electric fleet. The designers would have to be cognizant of the increased electrical power available within a nuclear submarine, as well as the need for effective distribution of that power to the warfare systems and the increasingly advanced sensors to be incorporated in future hulls and modernizations.

Another consideration is retaining the workforce knowledge base once construction of the nuclear-submarine fleet commences. Maintaining a knowledge base sufficient to accomplish future upgrades requires an effective strategy to extend workforce stability over the long term; if the government predicates its strategy on a service life of twenty-five to thirty years before the nuclear submarine is replaced by a new generation, it must develop plans to maintain that trained design workforce for decades.

The ROKN and its associated shipbuilder must overcome other construction constraints. Unlike the current construction requirements for conventional submarines, a nuclear-submarine program would have much greater safety requirements, to deal with special nuclear materials and the possibility of accidental release of radioactivity via irradiated fuels.

South Korea could learn from the U.S. Navy's experiences with submarine construction. Owing to design and construction errors, the U.S. Navy experienced a tragic accident in the sinking of USS *Thresher* (SSN 593) with all hands during trials in 1963. Out of that experience came implementation of the SubSafe program. SubSafe establishes a strict quality-control regime that is external to the shipbuilder and the program office overseeing construction.¹⁹ South Korea would need such a program if it were to pursue a nuclear-submarine program.

To fulfill the requirement for trained submarine designers, the nuclear-submarine shipyard would have to compete against the public shipyards for trained construction personnel. Generally, private-sector jobs pay more than their public-sector equivalents. For a program of national-security interest, the nuclear-submarine shipyard would have to offer comparable salaries and the incentive of contributing to the well-being of the nation.

The government would need not only a skilled ship-construction workforce but also a skilled workforce for the infrastructure required to construct, house, maintain, and eventually dispose of the nuclear-submarine fleet.

Logistics and Training

The ROKN would need to develop new logistics methods for handling nuclear fuel. Transport and storage facilities would be needed to minimize nuclear-submarine maintenance periods. A secure source of nuclear fuel would be essential. At a minimum, South Korea would need to renegotiate with the United States the two nations' agreement regarding peaceful nuclear cooperation, and build both a uranium-enrichment plant and a fuel-fabrication plant.

Then there is the classroom training required for nuclear-submarine sailors. In the U.S. Navy, such training takes a year to complete. To conduct this training, the ROKN would need an onshore training reactor in a facility convenient to the nuclear-submarine fleet. Any modifications, updates, or other changes to the ships' reactors would need to be replicated on the training reactor to ensure that the sailors train on equipment that is the same as that in the fleet. To gain superior proficiency operating a naval reactor, USN sailors require three years on the job; the ROKN and its sailors, being new to nuclear operations, might need even more time.

Disposal

Unlike conventional submarines, which can be dismantled at a scrapyard, nuclear submarines require special facilities to handle irradiated materials. The reactor core and the reactor vessel demand facilities designed to remove and transport them safely.

The ROKN should review the disposal issues that both Russia and the United Kingdom are experiencing with their decommissioned nuclear submarines. Both nations are struggling to dismantle their out-of-service submarines—specifically, the removal and storage of the reactor core and associated irradiated materials.²⁰

Prioritization

Any delay, regardless of cause, creates a potential technology gap between the fielded nuclear submarine and the adversary's submarine capabilities. South Korea can learn from Brazil's experience by ensuring dedicated long-term funding. Defense specialist Bernardo Wahl G. de Araújo Jorge notes that in addition to Brazil's budget constraints, the delay that country has experienced in completing its own nuclear-submarine project has been caused by difficulties with mastering the fuel cycle needed to support nuclear propulsion.²¹

South Korea may not experience the same learning curve, since unlike Brazil it possesses extensive experience in modern shipbuilding and, more important, more nuclear-engineering expertise. But while it already has an advanced nuclear-power industry, it does not enrich nuclear fuel, and at present nuclear propulsion is not within South Korea's shipbuilding repertoire.²² Understanding the significance of this issue is important; South Korea would have to make the acquisition of a nuclear submarine a national priority, with full government backing irrespective of changes in administrations.

Nuclear-Material Agreements

The biggest obstacle to Seoul's acquisition of a nuclear submarine is nuclear fuel. South Korea does not have an indigenous uranium supply, so it imports most of its fabricated uranium fuel from the United States. South Korea renewed its civilian nuclear cooperative 123 agreement with the United States in 2015. The agreement prohibits the ROK from using U.S.-supplied uranium for any military purpose, but permits Seoul to enrich uranium up to 20 percent for civilian applications, if Washington gives its consent. South Korea could purchase fuel from alternative suppliers, such as China, France, and Russia, but all three have similar peaceful-use requirements.²³ If South Korea is unable to obtain the necessary enriched uranium from a foreign source, the alternative would be indigenous enrichment, which would break its nuclear cooperative agreements by diverting enriched uranium to the nuclear-submarine program.

Denuclearization of the Korean Peninsula

If the ROK government authorizes an enrichment program, denuclearizing the peninsula will become more complicated. Ostensibly, achieving that is a major goal of the South Korean government.²⁴

In the April 2018 Panmunjom Declaration, Kim Jong-un and President Moon stated that North and South Korea would implement fully their previous agreements and declarations. “The previous 1992 South/North Denuclearization Declaration is clear: ‘South and North Korea shall not test, manufacture, produce, receive, possess, store, deploy, or use nuclear weapons. South and North Korea shall use nuclear energy solely for peaceful purposes.’”²⁵ North Korea clearly is in violation of this agreement.

SOUTH KOREA’S BEST RESPONSE

The ROKN possesses several very capable ASW platforms that provide a greater return on investment compared with a limited nuclear-submarine fleet. For the funds it would take to create and maintain a nuclear-submarine fleet, the Moon administration instead could purchase more of the current mix of available ASW assets. Likewise, making additional funds available could enable pursuit of new technologies that would provide ASW coverage over a greater swath of territory within the region.

Current Assets

The ROKN’s surface ships rival those in the surface fleets of many of the great powers in their ASW capability, augmented by decades spent developing cooperative tactics with the U.S. Navy. The ROKN can purchase more ASW capability within such a multidimensional program than it could by expending scarce defense funds on a single ASW dimension. Historical precedent shows that diverse assets overcome a focus on one kind of asset—even nuclear submarines.

Surface Naval Combatants. The ROKN currently fields the *Incheon*-class guided-missile frigates. At present they are configured for the surface-warfare mission but can be upgraded to accept antisubmarine rockets as well as land-attack missiles. At a cost of only \$250 million per ship, the ROKN could acquire multiple highly capable ASW frigates for less than the cost of a single nuclear submarine.²⁶

The new *Daegu*-class guided-missile frigates incorporate ASW systems specific to countering the DPRK threat. The ships incorporate antisubmarine missiles, torpedoes, and sonar systems, at a per-ship cost of approximately \$300 million.²⁷

The ROKN currently is building and fielding the *Sejong the Great* class of destroyers. This class provides the ROKN with a true blue-water capability, plus an important upgrade to its ballistic-missile-defense capability. At approximately

FIGURE 5
ROK NAVY *DAEGU*-CLASS FRIGATE



Source: Xavier Vavasour, "HHI Launches Fourth Daegu-Class FFX Batch II Frigate for ROK Navy," *Naval News*, 29 April 2020, www.navalnews.com/.

\$925 million per ship, the *Sejong the Great* destroyers provide an extensive ASW suite of weapons and sensors. The ship can store and launch 128 missiles configurable for missile defense, land attack, or ASW. It also carries two helicopters for use in ASW operations.²⁸

The cost per ship is significantly less than that of a nuclear submarine, while the ship provides an extra capability of ballistic-missile defense that a nuclear submarine cannot deliver.

FIGURE 6
ROK NAVY *SEJONG THE GREAT*-CLASS DESTROYERS



Source: USN photo, ID 100707-N-0260R-039

Airborne ASW. To integrate fully all dimensions of ASW warfare, the ROKN requires airborne assets that can operate and integrate with the surface and subsurface fleets. The United States has a very capable aircraft, the P-8A Poseidon, that can perform integrated ASW missions. The P-8A has a patrol radius of 1,200 nautical miles, with a capability to remain on station for four hours. It carries up to eleven torpedoes and 120 sonobuoys. The P-8A also can monitor up to sixty-four sonobuoys and relay their data to integrated fleet units for prosecuting hostile submarine contacts. For the U.S. Navy, “the P-8A Poseidon and [ASW helicopter] MH60R Seahawk are a formidable team that holds at risk the surface and subsurface adversary to allow our carrier strike groups and joint forces access and freedom to maneuver.”²⁹ The cost for this capability is \$125 million per aircraft. In 2018, the U.S. State Department approved the sale of eight Poseidons to South Korea, at an estimated cost of \$2.1 billion.³⁰

While the P-8A is a land-based asset, the MH-60R or equivalent helicopter is sea based. Both ROKN frigates and destroyers can operate ASW helicopters from their decks. Having a helicopter enables a frigate or destroyer to increase its coverage area during ASW operations. The MH-60R can carry up to three ASW torpedoes and twenty-five sonobuoys, and it contains the advanced airborne low-frequency dipping sonar, which has both passive and active capabilities. The unit cost for the MH-60R is approximately \$40 million per aircraft.³¹

Combining air assets with surface ships and submarines would enable the ROKN to detect and prosecute hostile nuclear-armed missile submarines across a much greater area than would be possible with a single nuclear submarine at sea.

FIGURE 7
USN P-8A POSEIDON DEPLOYING MK-54 AERIAL ASW TORPEDO



Source: “Restoring the UK’s Maritime Patrol Aircraft Capability (Part 2),” *Navy Lookout*, 4 April 2017, www.navylookout.com/.

FIGURE 8
MH-60R DEPLOYING DIPPING SONAR



Source: John Keller, "Navy Awards \$65.8 Million Order to Raytheon to Provide 22 Helicopter Dipping Sonar Systems," *Military Aerospace*, 16 November 2015, www.militaryaerospace.com/.

Combining new technologies, such as drone systems and AI, with existing ROKN assets would increase the probability of detection of hostile submarines even further.

Nonnuclear Submarines. The ROKN submarine fleet consists of the *Jang Bogo* class and the *Sohn Won-il* class. Both classes use diesel-electric propulsion, and each submarine has eight torpedo tubes. The *Sohn Won-il* boats have an endurance capability of eighty-four days; the *Jang Bogos*, fifty. Although a nuclear submarine can boast of significantly higher endurance figures, these satisfy the requirements of regional patrol operations. Additionally, at approximately \$300 million per conventionally powered attack submarine, the ROKN could acquire a greater number of submarines to enable continuous patrol operations in its regional security zones.³²

The ROKN is in the process of constructing the new *Dosan Ahn Chang-ho* class of submarines. Significantly larger than previous ROKN submarines, this class incorporates an air-independent propulsion (AIP) system. AIP provides greater underwater endurance than that of previous diesel-electric submarines. While the *Dosan Ahn Chang-ho*-class boat is larger, it has two fewer torpedo

FIGURE 9
ROK NAVY JANG BOGO-CLASS SUBMARINE AT SEA



Source: USN photo, www.cpf.navy.mil/.

tubes than previous ROKN submarines; however, it has the added capability of vertical-launch missile cells. The per-ship cost of this class, at approximately \$900 million, is still significantly less than that of a nuclear submarine.³³

Not only are the existing ROKN submarines capable of performing ASW missions at a fraction of the cost of nuclear submarines, but they offer a quieter operating platform. Detecting radiated noise is the key method for detecting submarines themselves, and thus avoiding potential attack by them. The quieter the submarine, the more difficult the ASW mission. While operating on electric power or AIP, a submarine is nearly undetectable by an adversary. In 2015 joint exercises, Sweden demonstrated the AIP's advantage "when HMS *Gotland*, a Swedish AIP submarine, 'sank' many U.S. nuclear fast-attack subs, destroyers, frigates, cruisers, and even the USS *Ronald Reagan* (CVN-76) aircraft carrier in joint exercises."³⁴

FIGURE 10
ROKN DOSAN AHN CHANG-HO FIRST-IN-CLASS SUBMARINE ON SEA TRIALS



Source: Xavier Vavasour, "ROK Navy's 1st 3000 Tons KSS-III Submarine 'Dosan Ahn Chang-ho' Passes Max Depth Test," *Naval News*, 27 August 2019, www.navalnews.com/.

Future Assets

Technology continues to reduce or eliminate ASW handicaps. The increased use of drone and autonomous systems can limit exposure of personnel and increase coverage of vast swaths of the ocean. New technologies open avenues in ASW by making submarines “visible” and reducing the threat of surprise. Improved computers also increase the effectiveness of ASW sensors through their ability to crunch vast amounts of data and provide actionable information to military and political decision makers. South Korea has a highly technical economic infrastructure that can exploit these new technologies at a much lower cost than that of a nuclear-submarine program.

Drones. Current drones consist not only of aerial but also of surface and underwater types. The aerial drone commonly used for ASW is the MQ-4C Triton. While it does not possess offensive weaponry, it does carry a powerful multi-function active sensor, with an active electronically scanned array radar. As the Triton has a thirty-hour endurance at a speed of more than three hundred knots, this drone can monitor large areas using radar or magnetic-anomaly detection to locate submarines of potential adversaries. At a cost of \$125 million per copy, the ROKN could purchase plenty of Tritons to cover important sea-lanes at a fraction of the cost of a single nuclear submarine. Also, the Triton is fully interoperable with all other military assets, enabling the immediate sharing of intelligence. An additional advantage of the Triton is that it uses commercial, off-the-shelf architecture, which means that upgrading the operating system is less complex, making it easy to keep up with the latest technological advances.³⁵

One example of a surface drone is the Liquid Robotics Wave Glider, which costs approximately \$300,000 per copy. The Wave Glider can host several payloads and underwater sensors to detect hostile submarines and provide connectivity among underwater vessels and surface or air units for complete, multidimensional ASW. The wave- and solar-powered Wave Glider has approximately a one-year endurance, and can maintain its location within a thirty-meter radius. As the Wave Glider has an extremely low profile, it is ideally suited for monitoring hazardous waters, providing early detection and data relay to quick-response aerial assets for prosecuting hostile submarines in times of crisis.³⁶

Teledyne’s Slocum G3 Glider operates underwater, using the energy in ocean waves to move in a sawtooth pattern up and down in the sea. At only \$125,000–\$150,000 per copy, this autonomous vehicle provides yet another method of detecting and communicating the locations of hostile submarines. When operating in swarms, Slocum Gliders can provide coverage over large ocean areas, reducing the requirement for manned-vessel sorties. The Slocum Glider is easy to operate using web-based navigation and has an endurance range measured in days or

FIGURE 11
DEPICTION OF MQ-4C TRITON CONDUCTING SURFACE SCANNING FORWARD OF FLEET



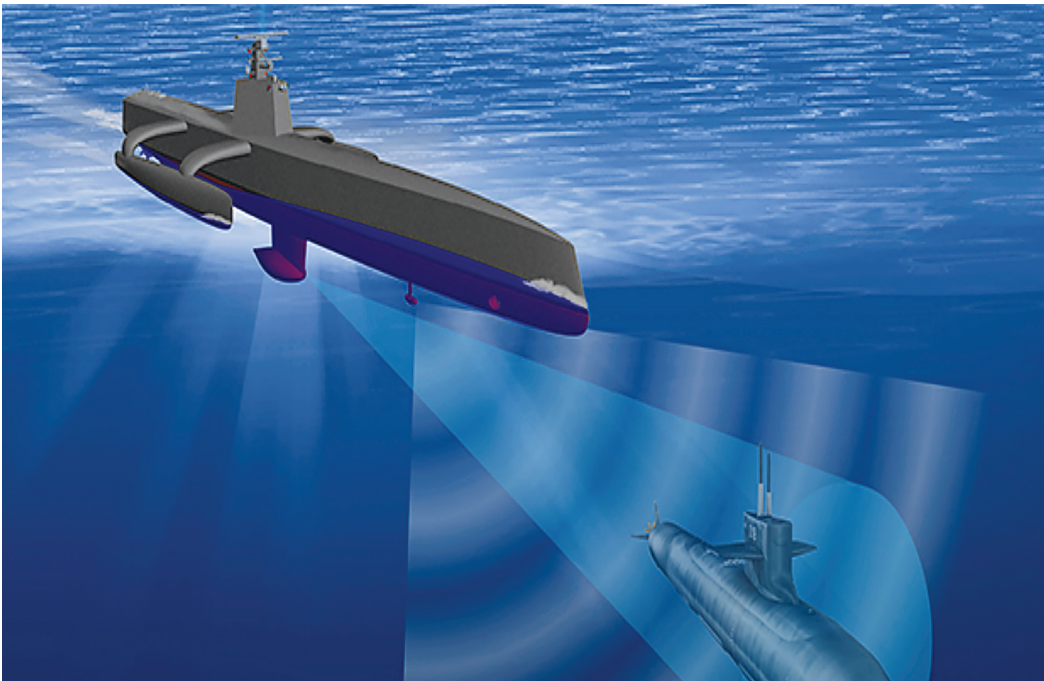
Source: Northrup Grumman, "MQ-4C Triton Broad Area Maritime Surveillance (BAMS) Unmanned Aircraft System (UAS)," technical datasheet, *World Defence News*, 29 September 2012, worlddefencenews.blogspot.com/.

months, depending on payload and mission. Each time the glider surfaces, it can transmit its data and receive new task orders as needed.³⁷

New unmanned surface vessels (USVs) continue to advance through testing phases, with deployments following within three to five years. Specifically, the U.S. Navy's Sea Hunter is a fully autonomous surface vessel that has the capability to navigate the seas without human input. Equipped with the latest towed-array sonar systems, the Sea Hunter can assist in detecting hostile submarines. Its relatively small and low profile reduces its radar signature compared with those of manned surface vessels. The Sea Hunter has an endurance of thirty to ninety days, depending on sea conditions, transit speed, and payloads. At approximately \$36 million per ship, the Sea Hunter provides a very-low-cost alternative to nuclear submarines. Its daily operating costs are a fraction of those of manned surface vessels. In the future, the Sea Hunter could be outfitted with missiles for attacking hostile submarines or surface vessels, with the attack decision remaining with a remote human operator.³⁸

Sensor Technologies. Ships, planes, and drones are only as effective as the ASW sensors they employ or those located elsewhere that provide data to the command-and-control (C2) network. Continual development provides new sensor

FIGURE 12
DEPICTION OF SEA HUNTER USV IN SUBMARINE-HUNTING ROLE



Source: Alexander M. G. Walan, "Anti-submarine Warfare (ASW) Continuous Trail Unmanned Vessel (ACTUV) (Archived)," *Defense Advanced Research Projects Agency*, n.d., www.darpa.mil/.

systems designed to detect and prosecute hostile submarines. Early detection would contribute to the ROKN's ability to track and counter hostile submarines, and during a crisis to prosecute an attack on them. Several different types of systems hold great potential for reducing further the missile-submarine threat.

The Deep Reliable Acoustic Path Exploitation System (DRAPES) deploys a stand-alone system of sonar arrays onto the seafloor to listen to the ocean. The advantage of seafloor-based arrays is that they are not subject to weather effects. The arrays can communicate submarine contacts along the array chain back to the shore-based C2 facility. DRAPES will assist the U.S. Navy in tracking down "one lone submarine amid vast swathes of oceans."³⁹ Implementation of DRAPES or a similar system would provide the ROKN with early-warning detection and tracking of DPRK missile submarines, obviating the need to sacrifice a significant portion of the ROK defense budget to a nuclear-submarine program.

During the Cold War, the U.S. Navy deployed the Sound Surveillance System (SOSUS) to monitor and track Soviet submarines, but changes are afoot. Two next-generation, fixed-position detectors—the Transformational Reliable Acoustic Path System (TRAPS) and the Fixed Distributed System—are replacing existing SOSUS sensors. The TRAPS passive array sonar system relies on big data and advanced signal processing, which provide greater performance over the old SOSUS system and active sonar. "These use large arrays of detectors with a much smaller range to filter out other ocean noise and focus on signals from 'even the quietest submarines at natural chokepoints in the ocean.'"⁴⁰ South Korea is situated near natural oceanic choke points through which an adversary's nuclear-armed missile submarines would have to transit.

Historically, among ASW sensors, those of the acoustic type have predominated; however, new advances in laser technology may offer alternative submarine-detection methods. The U.S. Navy is experimenting with light detection and ranging (lidar) technology. Blue-light, solid-state lasers operating on a 455-nanometer wavelength detect submarines effectively. "[C]ompact LIDAR sensors aboard submarines and Unmanned Underwater Vehicles (UUVs) may vastly improve sub-to-sub detection."⁴¹ If the ROKN were to marry this technology to a fleet of UUVs, it could monitor effectively any likely hostile nuclear-armed missile submarine in transit to the ocean. Once it had detected the submarine, the ROKN could dispatch the necessary ASW forces to deal with the threat.

Another nonacoustic technology that holds promise for submarine detection is advanced magnetic anomaly detection (MAD). Submarine detection near the ocean surface already uses existing MAD technology; what is new is the increased availability of big data and the computers necessary to process those

data. For example, “[w]hen a pair (or more) of MAD sensors move across an area, magnetic gradiometry—the mapping of magnetic signatures—is enabled. With an array of sensors capturing multiple axes, continuous streams of data can be processed by advanced computer algorithms which filter out natural fluctuations in electromagnetic fields.”⁴²

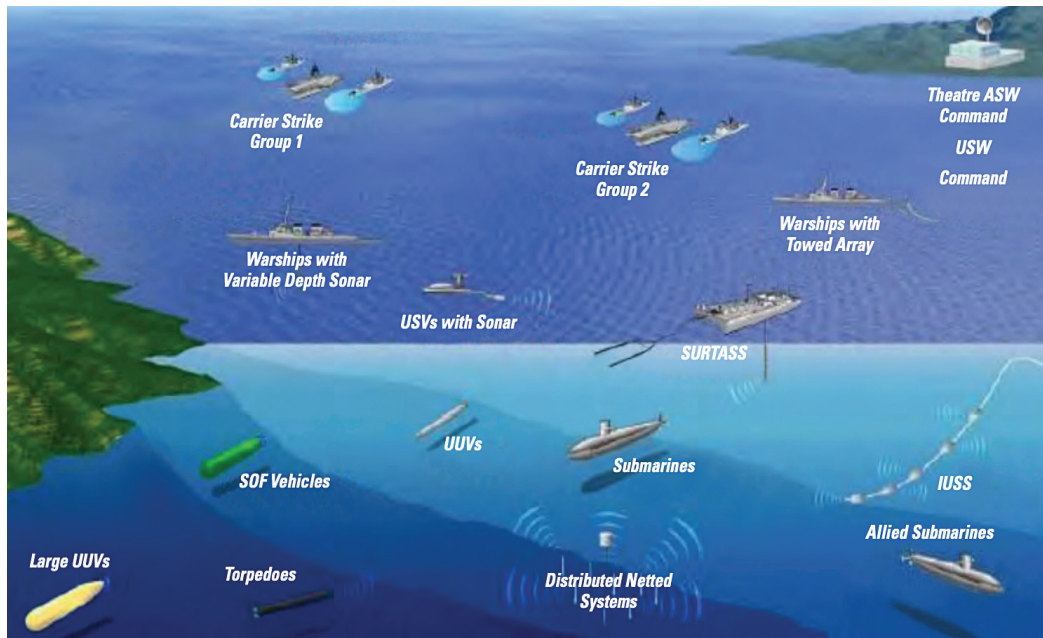
A final nonacoustic sensor is in the development process. Actually, it was the whiskers of seals that provided the model for this new development. “The passage of a submerged vessel creates small whirlpools, called a Karman vortex street. . . . When struck by a vortex, the whiskers vibrate, with the input from several telling [the] seal the approximate size, bearing, and velocity of the target.” As submarine-generated vortices can last for hours, a large window is open for any pursuer to pick up the submarine’s trail.⁴³ This type of sensor will be ideal for use in congested waters and natural choke points, but will be limited to submarine trailing; it will not pick up submarines from the side or front, as there is no ability to detect the vortex until the submarine passes over the detector.

The rapid development in the technology of acoustic and nonacoustic sensors could provide the ROKN a better return on investment than a nuclear-submarine program. Advances in miniaturization, powerful computing systems, and unmanned systems mated with AI may provide the best protection against hostile submarine threats to South Korea. “If [sensor systems are] developed and deployed, significantly advanced non-acoustic detection technology can increase a nation’s [ad]vantage to monitor their surrounding waters for adversary attack vehicles.”⁴⁴

Cooperative ASW. ASW exercises that the NATO Centre for Maritime Research and Experimentation (CMRE) conducted in February–March 2020 and again in the same months in 2021 illustrated the advantages of multidimensional ASW in the detecting and tracking of submarines. CMRE deployed numerous passive sensors on autonomous vehicles, buoys, and seabed devices off the coast of Sicily prior to the start of the exercise. For active submarine hunting, CMRE focused on the concept of multination multistatic ASW, “where an active sonar source would create pings for dozens or hundreds of passive sensors.” The array of passive sensors detects the resulting sound waves bouncing off enemy submarines. The more sensors in the water, the better detection and recognition of type of submarine and the direction the submarine is heading. The DYNAMIC MANTA exercise used a combination of several Ocean Explorer twenty-one-inch-diameter autonomous underwater vehicles and Liquid Robotics’ Wave Gliders to serve as communication nodes between ships and autonomous underwater vehicles.

“The key to multi-nation multistatic ASW is information-sharing.” Each participant must know where exactly the active sonar source is located. Those data

FIGURE 13
MULTIFACETED VIEW OF COOPERATIVE ASW CAPABILITIES



Source: "Navy Communications System Modeling and Simulation," Scalable Network Technologies, n.d., dev.commswork.com/.

enable each participant to detect the sound source accurately and relocate assets to intercept or track the enemy submarine.⁴⁵

The true advantage illustrated by these annual DYNAMIC MANTA exercises was multinational cooperation in conducting multidimensional ASW. A multi-static ASW system, in cooperation with the United States and Japan, might serve South Korea better in its defense against the DPRK threat. Given the open-water constraints that Pyongyang and Beijing face, the multinational, multidimensional solution may be Seoul's better investment, versus the nuclear-submarine program.

Artificial Intelligence. AI has the potential to be a major game changer in the realm of ASW. The continued development of more-powerful sensors and the resulting increase in raw data require powerful AI algorithms to process. AI can turn mountains of data into the actionable knowledge that naval leaders need to prosecute hostile-submarine threats. Additionally, as the development of unmanned systems continues, AI increasingly is required to operate them, in both friendly and hostile environments. AI provides the potential for unmanned systems to act in concert with each other. This aspect of AI opens the possibility of coordinating a complete multidimensional ASW mission without putting humans in harm's way.

Researchers at the U.S. Naval Postgraduate School recently conducted a demonstration using swarm technology. With no human control, two flights consisting of ten drones each engaged in an aerial-combat exercise. An algorithm called Greedy Shooter controlled each drone. The objective was for a drone to maneuver against an opponent to obtain a kill shot.⁴⁶ This demonstration illustrated the power and potential of AI in future military combat; the entire exercise proceeded without human intervention or control. Such is the power contained in fully autonomous systems, but ethics issues associated with fully autonomous weapon systems require serious consideration in the future.

Seoul's case for acquiring nuclear submarines hinges on the assumption that it is a strategic necessity for South Korea to have them. As North Korea develops missile submarines and Russia and China deploy new nuclear submarines, South Korean officials presume that South Korea should have "corresponding military power."⁴⁷ Yet in fact, South Korean spending on a nuclear-submarine fleet actually may undermine the country's overall national security, as compared with spending the same amount, or even less, intelligently—on a non-nuclear ASW force.

Certainly, the projected timeline for deploying the first ROKN nuclear submarines is unreasonable; Seoul would be lucky to deploy before 2035. South Korea may reduce that timeline by modifying its existing KSS-III design, but a reasonable assumption is that the timeline will not shrink significantly. This makes acquisition of nuclear-powered submarines a poor response to the current DPRK submarine threat.

Furthermore, the seas surrounding South Korea make nuclear-submarine operations problematic, at best. The West Sea (Yellow Sea) is too shallow (fifty meters deep) for large nuclear submarines. While the East Sea (Sea of Japan), with an average depth of 1,500 meters, provides the necessary operating environment for large nuclear submarines, the addition of a few South Korean nuclear submarines there will do little to reduce the DPRK missile-submarine threat; in 2015, North Korea sallied about fifty submarines simultaneously. Countering such a large number of submarines demands higher-quality ASW capabilities than a handful of nuclear submarines ever could provide.⁴⁸

Rather than waste its money on nuclear submarines, South Korea could lock down a superior suite of ASW capabilities that would provide multiple mission capabilities. A recent study on ASW concluded, "Based on Cold War experience, some U.S. experts assume that the United States would need to possess five SSNs [nuclear-powered attack submarines] to keep track of each Chinese SSBN [nuclear-powered ballistic-missile submarine] at sea."⁴⁹ On the basis of that statement, the three to six nuclear submarines the ROKN desires would not meet its

requirements; instead, it would need a fleet of fifteen to twenty submarines to deal with DPRK and Chinese missile submarines. At a conservative cost of \$1.6 billion per copy, the ROK defense budget would have to absorb an acquisition cost of between \$24 and \$32 billion; that figure does *not* include ancillary costs. As noted previously, the ROK annual defense budget was approximately \$42 billion in 2019. Funding for pushing forward down a path toward acquiring nuclear submarines would compete with funding demands from the ROK Army and Air Force, putting at risk the ROK's overall defense posture against the Kim regime.

The better investment of limited ROK defense funds is toward the expansion of current ASW assets: frigates, destroyers, diesel-electric and AIP submarines, and ASW aircraft. These assets can be acquired for less than a nuclear submarine costs, and Seoul already has the infrastructure to support and maintain such assets. The ROK shipbuilding industry would not suffer from the lack of a nuclear-submarine program, as the ROKN would be purchasing additional conventional-fleet units.

The ROKN should partner with leading technology industries to research and field new ASW sensors, both acoustic and nonacoustic. The ROK also must leverage the technical expertise that domestic industry is developing in the robotic and AI sectors. Combining new technologies with existing ROKN platforms would provide a multidimensional ASW capability versus a nuclear-submarine program that would provide a single-dimensional response.

As Frank von Hippel charges, "Nuclear submarines are superior for travel to distant employment areas, not for tracking a neighbor's diesel-electric submarines in nearby waters."⁵⁰ South Korea is *not* a global military nation; it is a nation with regional security requirements. Producing and operating nuclear submarines would constitute a costly venture that would do little to increase Seoul's national security.

NOTES

1. Kim Tong-Hyung, "SKorea Scrambles to Improve Weapons Following NKorea Test," *AP News*, 5 September 2017, apnews.com/.
2. Jung Da-min, "Korea Accelerates Submarine Development Project," *Korea Times*, 11 November 2020, koreatimes.co.kr/; Seoc Woo Kim, Jungmin Kang, and Frank von Hippel, "South Korea's Risky Quest to Build Nuclear-Powered Attack Submarines," *Bulletin of Atomic Scientists*, 18 November 2020, bulletin.org/; Sanghoon Kim, "Time for South Korea to Build Nuclear Submarines?," *National Interest*, 22 August 2020, nationalinterest.org/.
3. Sang-Ho Yun, "S. Korean Military Announces Plan to Develop 3 4,000-Ton Submarines," *Dong-A Ilbo*, 11 August 2020, www.donga.com/.
4. Section 123 of the U.S. Atomic Energy Act generally requires the conclusion of a peaceful nuclear-cooperation agreement for significant transfers of nuclear material or equipment from the United States.

5. "North Korea—Overview" *Nuclear Threat Initiative*, October 2020, www.nti.org/.
6. Uri Friedman, "North Korea Says It Has 'Completed' Its Nuclear Program," *The Atlantic*, 29 November 2017, www.theatlantic.com/.
7. Jack Kim, "Explainer: North Korea's Suspected Submarine Missile 'Pushes the Envelope,'" *Reuters*, 2 October 2019, reuters.com/.
8. Sukjoon Yoon, "Expanding the ROKN's Capabilities to Deal with the SLBM Threat from North Korea," *Naval War College Review* 70, no. 2 (Spring 2017), pp. 49–74.
9. Franz-Stefan Gady, "Will South Korea Build Nuclear Attack Subs?," *The Diplomat*, 8 November 2017, thediplomat.com/.
10. Ibid.
11. Yonhap, "S. Korea's 2020 Defense Budget Rises 7.4% to over 50tr Won," *Korea Herald*, 11 December 2019, koreaherald.com/.
12. Jeff Jeong, "South Korea Eyes French Design for Indigenous Nuclear Sub, Sources Say," *Defense News*, 28 March 2018, www.defensenews.com/.
13. John Schank et al., "The Submarine Design Process," chap. 2 in *Sustaining U.S. Nuclear Submarine Design Capabilities* (Santa Monica, CA: RAND, 2007), pp. 7–24, available at www.jstor.org/.
14. Gady, "Will South Korea Build?"
15. Ibid.
16. Basic information on South Korean shipbuilding is available at the following websites: *SP's Naval Forces*, www.spsnavalforces.com/, and *Shipyards Directory*, shipyards.gr/.
17. Director, Naval Nuclear Propulsion, "Report on Use of Low Enriched Uranium in Naval Nuclear Propulsion," fissilematerials.org, June 1995.
18. Ibid.
19. "The Unsinkable Navy Ship: The Origin of the SubSafe Program and Its Impact on Civilian Ships Today," *CPV Manufacturing*, www.cpvvmfg.com/; Sam LaGrone, "After Thresher: How the Navy Made Subs Safer," *USNI News*, 4 April 2013, news.usni.org/.
20. Paul Marks, "How Do You Dismantle a Nuclear Submarine?," *BBC*, 29 March 2015, www.bbc.com/; Michael Peck, "How Do You Dispose of Old Nuclear Submarines?," *National Interest*, 9 September 2020, nationalinterest.org/; Cristina Chuen and James Clay Moltz, "Nuclear Submarine Dismantlement," *Nuclear Threat Initiative*, 1 August 2001, nti.org/.
21. Domingos Zapparoli, "Renewing the Fleet," *Naval Engineering*, no. 274 (August 2019), pp. 48–51, available at revistapesquisa.fapesp.br/.
22. Ibid.
23. Frank von Hippel, "Mitigating the Threat of Nuclear Weapon Proliferation via Nuclear-Submarine Programs," *Journal for Peace and Nuclear Disarmament* 2, no. 1 (2019), doi [10.1080/25751654.2019.1625504](https://doi.org/10.1080/25751654.2019.1625504); Sharon Squassoni, interview by author, 25 August 2020. The subject of the conversation was nuclear cooperative agreements between the United States and South Korea. One nuclear supplier that does not include a no-military-usage provision is India.
24. Chung Min Lee and Kathryn Botto, "President Moon Jae-in and the Politics of Inter-Korean Détente," *Carnegie Endowment for International Peace*, 16 November 2018, carnegieendowment.org/; Park Byong-su, "Navy to Solicit Bids into Examining Legality of Nuclear Powered Submarines," *Hankyoreh*, 28 August 2017, english.hani.co.kr/.
25. Bruce W. Bennett and Soo Kim, "North Korea Has Agreed to Denuclearization. Trump Could Try to Make It Happen," *RAND*, 28 September 2020, rand.org/.
26. "Korea's New Coastal Frigates: The FFX Incheon Class," *Defense Industry Daily*, 1 May 2020, defenseindustrydaily.com/.
27. Ibid.
28. Blacktail (pseud.), "Sejong the Great Class: Guided Missile Destroyer," *Military Today*, military-today.com/.
29. Walter Massenburg [Vice Adm., USN (Ret.)], "Why We Need Maritime Patrol and Helicopters," *Association of Naval Aviation—Hampton Roads Squadron*, Summer 2016, hrana.org/.
30. Franz-Stefan Gady, "US State Department Approves Sale of 6 P-8 Poseidon Sub-Hunting Planes to South Korea," *The*

- Diplomat*, 14 September 2018, thediplomat.com/.
31. "MH-60R Seahawk Multi-mission Naval Helicopter," *Naval Technology*, naval-technology.com/; "Sikorsky MH-60R Seahawk," *Aerocorner*, aerocorner.com/.
 32. "South Korea Submarine Capabilities," *Nuclear Threat Initiative*, 17 February 2021, nti.org/.
 33. Nathan Gain, "ROK Navy KSS III Submarine Program Reaches Another Milestone," *Naval News*, 10 December 2020, www.navalnews.com/; Xavier Vasseur, "South Korea's DSME Launches 2nd KSS III Submarine for ROK Navy," *Naval News*, 10 November 2020, www.navalnews.com/; Franz-Stefan Gady, "South Korea Launches First-of-Class 3,000-Ton KSS-III Diesel-Electric Attack Submarine," *The Diplomat*, 14 September 2018, thediplomat.com/; *Wikipedia*, s.v. "Dosan Ahn Changho-Class Submarine," en.wikipedia.org/.
 34. Michael Walker [Ens., USN] and Austin Krusz [Ens., USN], "There's a Case for Diesels," U.S. Naval Institute *Proceedings* 144/6/1,384 (June 2018).
 35. Richard R. Burgess, "Triton Deploys at Last: The Navy Takes Its New UAV to the Western Pacific," *SeaPower*, 28 April 2020, seapowermagazine.org/.
 36. David B. Larter, "Liquid Robotics Launches Updated Wave Glider Drone for Arctic Conditions," *Defense News*, 13 September 2017, www.defensenews.com/; Joel Pederick, "GLIDER Unmanned Ocean Exploration: Advancing Knowledge of Arctic Marine Ecosystems," *Maritime Robotics*, 10 September 2018, liquid-robotics.com/.
 37. "Slocum Glider," *Woods Hole Oceanographic Institute*, whoi.edu/; Graham Flanagan, "Here's the Underwater Drone the Navy Will Use to Spy on Enemy Submarines," *Business Insider*, 14 January 2014, businessinsider.com/; Stephen Mraz, "Long-Range Underwater Drone Uses Little Fuel," *Machine Design*, 2 April 2014, machinedesign.com/.
 38. Joseph Trevithick, "Navy's Sea Hunter Drone Ship Has Sailed Autonomously to Hawaii and Back amid Talk of New Roles," *The Drive*, 2 February 2019, thedrive.com/; Wyatt Olson, "Navy's Revolutionary Sea Hunter Drone Ship Being Tested out of Pearl Harbor," *Stars & Stripes*, 7 November 2018, stripes.com/; "Sea Hunter: Inside the US Navy's Autonomous Submarine Tracking Vessel," *Naval Technology*, 3 May 2018, naval-technology.com/.
 39. Tim Broderick, "Underwater Sensors Bolster Anti-submarine Capabilities," *Defense Systems*, 31 October 2016, defensesystems.com/.
 40. Robert Elliott [Petty Officer 2nd Class, USN], "Finding the Enemy Below," U.S. Naval Institute *Proceedings* 145/10/1,400 (October 2019), p. 28, available at www.usni.org/.
 41. Evan Lisman, "Non-acoustic Submarine Detection," *On the Radar*, 5 November 2019, p. 5, ontheradar.csis.org/.
 42. Ibid.
 43. Elliott, "Finding the Enemy Below," p. 28.
 44. Lisman, "Non-acoustic Submarine Detection," p. 8.
 45. Megan Eckstein, "Sonar Equipped Drone Fleets Could Be Key to Future Submarine Warfare," *USNI News*, 9 March 2020, news.usni.org/. *Multistatic* refers to the use of multiple sonar sources, passive and active, working cooperatively, so that a network of sensors increases the probability of detecting submarines.
 46. Paul Scharre, *Army of None: Autonomous Weapons and the Future of War* (New York: W. W. Norton, 2019), pp. 16–18.
 47. Yun, "S. Korean Military Announces Plan."
 48. Kim, "Time for South Korea to Build Nuclear Submarines?"
 49. Tong Zhao, "U.S. Anti-submarine Warfare and Its Impact," in *Tides of Change: China's Nuclear Ballistic Missile Submarines and Strategic Stability* (Washington, DC: Carnegie Endowment for International Peace, 2018), available at admin.carnegieendowment.org/.
 50. Von Hippel, "Mitigating the Threat of Nuclear Weapon Proliferation."

JOMINI AND NAVAL SPECIAL OPERATIONS FORCES

An Applied-Competition Approach to Russia

Kevin D. Stringer

The return of theater-wide competition in Europe with a revanchist Russia presents challenges to U.S. national-security interests. Addressing these challenges would benefit from the strategic thought of Baron Antoine-Henri de Jomini, a celebrated Swiss-born Napoleonic officer and one of the first modern theorists of war.¹ A potential path for the U.S. military to compete effectively against Russia in the European theater, while preparing for potential combat operations, resides in extracts from Jomini's operational theory of warfare applied to the maritime domain. Jomini's writings on campaigning and his "rectangular template" for gaining theater advantage offer a model for the United States to confront Russia's asymmetric and "gray zone" threats in Europe.²

The European theater is highly significant for Russian national security. On land, besides offering direct and historical invasion routes into Russia's interior, eastern Europe was a traditional sphere of Russian influence dating to tsarist times. In the

modern era, the adjacent maritime regions have taken on greater strategic importance. The Barents Sea and White Sea are the cornerstones of Russia's power projection into the Arctic.³ In the Baltic Sea, Russia's Kaliningrad exclave, several U.S. NATO allies, concerned neutral states, and wider European security and energy interests all converge.⁴ The Black and Caspian Seas touch several Russian national-security interests and serve as platforms for ongoing Russian political and military activities in Ukraine, Crimea, Georgia, Central Asia, and the

Colonel Kevin D. Stringer, USA, is a Eurasian foreign-area officer and strategist assigned to Special Operations Command, Europe. He is currently a military faculty member at the U.S. Army War College. He received his PhD in international affairs from the University of Zurich and an MA in international relations from Boston University. He is an affiliated faculty member at the General Jonas Žemaitis Military Academy of Lithuania, and a fellow at the Centre for International and Defence Policy, Queen's University, Kingston, Ontario, Canada.

© 2021 by Kevin D. Stringer
Naval War College Review, Autumn 2021, Vol. 74, No. 4

wider Middle East. Russia continues to expand the size and capability of its Caspian Sea flotilla to serve further competitive adventurism in the region.⁵ Finally, eastern Europe's riverine network provides direct access into the Russian heartland via the Dnieper, Don, and Volga feeder rivers.

Given the strategic importance of Europe's maritime environment to Russia, a U.S. competition and battlefield-preparation campaign built on irregular warfare and Jominian concepts, and leveraging U.S. naval special-warfare expertise as part of a family of integrated and low-visibility or light-footprint capabilities—such as subsurface intelligence, surveillance, and reconnaissance (ISR) methods and cyber actions—well may be the decisive approach to gaining an advantage over Russia prior to conflict. As noted by General Tod Wolters, Commander, U.S. European Command and Supreme Allied Commander Europe, “Every day, [European Command] and NATO compete to challenge and counter Russia's *below-the-threshold* strategy, and to counterbalance the multi-faceted and capable military power which underwrite[s] its malign approach.”⁶ Jomini's campaigning theory, in combination with maritime special-operations capabilities, suggests a convincing maritime approach for supporting these efforts to contest Russia's malign activity in Europe while remaining below the level of armed conflict, and supporting a broader conventional effort to prepare a possible future war-fighting environment in a manner consistent with the Department of Defense's approach for using irregular warfare to secure advantages during peacetime and prior to potential conflicts.⁷

This article will first highlight the vexing nature of “gray zone” competition against Russia for the U.S. military in Europe and contrast this with Russia's own adroitness. It then will distill the concepts from Jomini's theory of campaigning that are pertinent to competing with Russia and apply them to a proposed maritime irregular-warfare campaign framework. These concepts include theater objectives, lines of effort, a rectangular template for organizing and applying forces, and measures of effectiveness. From this foundation, I develop an operational approach using naval special-warfare capabilities and a suite of special operations forces-enabled cyber and enhanced ISR capabilities for conducting several peacetime missions against Russian activities: understanding the environment through special reconnaissance; preparing the environment to enable the military to transition rapidly from peacetime to combat operations, if needed; and performing active naval diplomacy measures, for both deterrent and coercive effect. This path offers a mechanism to move the U.S. defense establishment from contemplating competition to acting. It is also a step toward addressing findings in government-sponsored analysis that “more emphasis should be placed on developing operational-level guidance for employing special operations forces (SOF) in competition below armed conflict,” specifically

in the European theater.⁸ This emphasis is needed to provide greater clarity for the future training and resourcing of special operations forces for their missions against great-power adversaries, which are different in many respects from the counterterrorism and counterinsurgency focus of the past two decades.

THE CHALLENGE OF COMPETITION AND GRAY-ZONE OPERATIONS

The 2018 U.S. National Defense Strategy declared that “[i]nter-state strategic competition, not terrorism, is now the primary concern in U.S. national security.”⁹ The Biden administration’s 2021 Interim National Security Strategic Guidance continues this policy thread and outlines an agenda for the United States “to prevail in strategic competition.”¹⁰

The concept of great-power competition raises three vexing issues for the U.S. military. First, the definition and contours of competition remain amorphous. There is a lack of consensus and agreement among various schools of traditional international-relations thought on great-power competition and what it means for the United States. A 2018 study postulates that there is no consensus on the definition of *competition* among states and assesses that little U.S. analysis or forethought has been given to the characteristics of this emergent era.¹¹ While this latter point may be an extreme conclusion, it nevertheless suggests a lack of clarity in U.S. national-security approaches to competition.

Second, the national-security goals and strategy for competing against other great powers are nebulous. Amid this uncertainty, the U.S. military is exhorted to “adopt a better framework for understanding, describing, and participating within a competitive operational environment.”¹² The current notion of great-power competition, though, offers little prescription and unclear direction for U.S. defense policy.¹³

Third, the assumed primacy of nonmilitary activities in competition raises questions about the application of military power to compete with adversaries and the appropriate nesting of military capabilities within a broader whole-of-government approach. Russia’s “gray zone operations are a form of coercion that mix conventional and unconventional military activities with other security forces and non-military actions—like diplomacy, influence operations, and economic pressures.”¹⁴ U.S. Defense Department guidance asserts that the military element of national power needs to find its role and approach to remain below the level of armed conflict while creating strategic opportunities for the U.S. interagency and allies.¹⁵ The preceding points highlight the lack of direction, understanding, and focus within the U.S. national-security establishment on how to apply military power effectively to compete against Russia without precipitous escalation.

In contrast, Russia appears to operate effectively in this gray competitive space, given its strategic culture, historical experience, and limitations as a great power. The Kremlin employs a mixture of national-power instruments to exploit and achieve temporal and regional advantages while avoiding its targets' thresholds for armed conflict.¹⁶ With the perspective that competition is an integral element of the "permanent state of war" mentality that some analysts believe characterizes Russian national-security thinking on interstate relations, Russia employs a set of hybrid means to attempt to destabilize relevant countries and weaken both U.S. influence and the NATO alliance.¹⁷ As General Wolters noted, this "*below-the-threshold of armed conflict* strategy via proxies and intermediary forces . . . attempt[s] to weaken, divide, and intimidate [U.S.] Allies and partners using a range of covert, difficult-to-attribute, and malign actions."¹⁸ President Vladimir Putin's modern empire-building effort to restore Russian prestige and great-power status does not rely solely on military power but includes a "postmodern" mix of political blackmail and subversion, information and cyber operations, economic leverage and financial intimidation, and military sales and exercises.¹⁹ This mix is not new, and much of it flows from the legacy of Soviet "active measures" dating to the Bolshevik Revolution and the Cold War.²⁰

Russia has demonstrated these methods in Georgia, Ukraine, Syria, Libya, and the High North. In Georgia, Moscow initiated a passport-distribution scheme in 2002 to create "Russian citizens" in the Abkhazia and South Ossetia regions who later could be instrumentalized as "oppressed minorities" leading up to the August 2008 Russo-Georgian war. This consular effort was accompanied later by cyber denial-of-service attacks launched from Russian servers that paralyzed Georgian government websites prior to the conventional conflict.²¹ In Ukraine, the Kremlin used information operations to shape and control a pro-Russian narrative of the 2013–14 Maidan revolution and subsequent takeover of Crimea and contested occupation of the Donbas region. Armies of Russian bloggers, journalists, and propagandists sustained a social media campaign designed to undermine pro-Western Ukrainian actors, create fear within the pro-Russian population, and obscure Russian irregular-warfare activity by proxy forces in Crimea.²² These operations often had primacy over more-conventional military activities.

In Syria, Russia has used proxies effectively to steady the Assad regime.²³ Specifically, Russia's use of operatives from the Wagner Group, a private military company—many recruited from among former intelligence-services personnel and military veterans—allowed Russia to attack U.S. and coalition forces in Syria in February 2018 while maintaining plausible deniability.²⁴ Similarly, in Libya, Russia expanded its use of deniable proxies from the Wagner Group

to advise Libyan National Army troops as well as to engage in direct combat operations. These efforts enhance Russia's geopolitical leverage in the Mediterranean beyond its Syrian naval bases while obscuring official Russian government involvement.²⁵

Finally, in the maritime domain, particularly in the High North, Russia has continued opportunities for mischief by applying subversive measures on geographically isolated islands, undersea cables, energy supplies, and commercial supply chains through front companies, proxies, and dual-use commercial vessels.²⁶ These ambiguous Russian activities can be nested in the concepts promulgated by the Russian chief of the general staff Valery Gerasimov in widely cited remarks published in February 2013, in which he urged a new formulation of doctrine and tactics to win the wars of the twenty-first century, where the lines between war and peace are blurred.²⁷ Russia's gray-zone operations can be combatted, and perhaps even reversed, by applying Jominian principles to an irregular-warfare framework to develop an operational approach that applies naval special-operations tools against Russia in the European theater's maritime competitive space.

JOMINIAN THEORY AND A MARITIME CAMPAIGN FRAMEWORK

Russian power can be confronted and contained using principles of strategic organization that Jomini outlined in his best-known work, *Summary of the Art of War*.²⁸ If one abstracts Russia's broad strategic efforts and superimposes them on the geographic Eurasian landmass, Jomini's principles of geometry, strategic points, and force provide an analytical framework that illuminates the options for integrating naval and other special operations forces into a synchronized, theater-level campaign.²⁹ Like Clausewitz and *On War*, Jomini is often ambiguous about his theory of warfare, requiring interpretation for modern application.³⁰ Also, Jomini's theory was developed in a nineteenth-century context that was characterized by well-defined conditions of peace and war. This consideration may limit the full application of his ideas to current gray-zone operations, but—considering the Russian national-security perspective that interstate relations are a permanent and fluid state of war, and that the current conflict with the United States and the West is being fought across multiple domains, albeit for the most part in a nonlethal fashion—Jominian principles may be more relevant than expected.³¹ In particular, Jomini's ideas on campaigning, a rectangular template for theater operations, and a concentration on decisive strategic points provide a basis for conceptualizing a special operations-centered maritime irregular-warfare campaign against Russia in the European area of operations.

For Jomini, the campaign was a central element of warfare requiring careful planning and preparation, in which the commander's main objective was to

dominate his assigned zone of operations or theater.³² Jomini further characterized the operational theater as “the territory upon which the parties may assail each other.”³³ In modern terms, this territory is the geographic area where adversaries engage either in competition below the threshold of conflict or in actual war. Consistent with giving primacy to the campaign and emphasizing the theater of operations, Jomini was spatially oriented. He believed that “[s]trategy is the art of making war upon the map and comprehends the whole theater of operations.”³⁴ To gain theater advantage and domination, Jomini theorized what I call a “rectangular template” for visualizing his recommended operational approach, writing, “If every theater of war forms a figure presenting four faces more or less regular, one of the armies, at the opening of the campaign, may hold one of these faces . . . while the enemy occupies the other. . . . The different ways of occupying this theater will lead to widely different combinations.” Jomini’s prescription for domination was to control at least two, and potentially three, sides of this rectangle to wrest control and advantage from an adversary. A commander achieved this control by identifying and controlling decisive strategic points relative to the theater rectangle. These decisive strategic points, often geographic, were characterized by some enduring military significance for the theater and the military operations within its boundaries. Jomini further indicated that some of these strategic locations possessed a high political value and termed these sites “political objective points.” For Jomini, success implied concentrating forces at these decisive points to dominate the theater rectangle while taking the initiative to keep an opponent off balance.³⁵

Applied to twenty-first-century conditions and within a campaign framework, Jomini’s theoretical concepts illustrate a path to gain theater advantage over Russia’s gray-zone campaigns for influence in Europe. First, if the Jominian theater aim is to “dominate the assigned zone of operations,” then U.S. theater objectives in maritime competition should be the disruption of Russian activities that are below the threshold of war while gaining the initiative in that competitive space and imposing greater costs on Russian actions.

Placing Jomini’s rectangular template over eastern Europe—the target of most of Russia’s hybrid activity—suggests that the most promising locations for strategic efforts exist primarily within the maritime space (see map). Russia holds its north–south baseline on the east side of the rectangle and the U.S. and NATO allies hold the north–south baseline on the western face. The other two faces are largely maritime corridors. The northern west–east face includes the Baltic, Barents, and White Seas, and the southern face consists of the Black and Caspian Seas. Both faces’ respective littoral doorways provide Jominian opportunities to influence the other two faces of the rectangle and gain the competitive initiative

A PROPOSED JOMINIAN RECTANGULAR TEMPLATE FOR GRAY-ZONE COMPETITION IN EUROPE



by surveilling, disrupting, or dislocating Russian activities while remaining below the level of armed conflict.

Russia has a long landmass border of approximately 4,700 miles stretching from Norway to Azerbaijan, flanked by these maritime access points in the Barents and White Seas and the Baltic, Black, and Caspian Seas, including their related rivers and estuaries. Although U.S. Army, Air Force, and Marine ground units conduct frequent deterrence activities along the Russian land border, often with allies and partners, the land portion of this border is more restrictive for U.S. disruptive competitive action owing to political, military, and legal restraints and escalation considerations.

In contrast, the maritime avenues offer the best ingress and access points into Russian areas of interest and influence with legal and political space that avoids the unacceptable escalatory risks of acting across sovereign land boundaries. This operational approach would adhere to two relevant Jominian principles. The first is to maneuver forces to threaten strategic decisive points, specifically on the flanks and near the base of power.³⁶ Maneuver in the competitive space

implies activities relying on access and relationships that prepare the environment to allow for a rapid transition by the U.S. military into offensive combat operations if needed. The maritime environment provides international navigational rights in the Barents, White, Baltic, and Black Seas, which offer the flexibility to approach Russia's strategic decisive points in its littoral regions in a manner that the land borders with Russia do not permit. Additionally, the littoral regions offer a surfeit of strategic decisive points, or targets of interest, including the Kola Peninsula, the Baltic islands, Crimea, and the mouth of the Don River.

These points host critical infrastructure and strategic forces that are essential to Russian national defense, and special operations forces' peacetime operations near these points can provide greater situational awareness and understanding of these nodes for numerous purposes, ranging from early warning to preparation for contingency operations. (Given the Caspian Sea's inland location, a coastal state would have to grant access, which involves some diplomatic relationships that presently are challenging for the United States.) Additionally, in his section in the *Art of War* on "descents," Jomini mentions maritime operations as being valuable "[t]o make a diversion, at once political and military," to distract or impose costs on an enemy.³⁷ While Jomini's comments refer to operations in actual conflict, this principle has validity for maritime operations during peacetime competition as well. Finally, while one can argue that cyber and information operations are unconstrained by physical borders and make them irrelevant, these activities are not stand-alone as currently practiced, but instead generally are linked to an accessible physical domain—air, land, or sea—to achieve desired effects. In the case of Russia, the maritime domain seems to offer the best opportunities for access and maneuver at lower escalation risk and can be used to amplify the political effects of cyber and information operations.

Jomini does not directly discuss in the *Art of War* how to assess a campaign's success in the modern sense, since in his era victory in combat and the occupation of territory were the marks of effectiveness.³⁸ Nevertheless, by applying his principles to a modern competition campaign, measures of effectiveness would be indicated and derived from changes in Russian activities and behavior in the respective maritime regions of interest and near the identified decisive strategic points, as a result of U.S. naval special-operations activity. Qualitative assessment of Russian reactions to U.S. activities and an estimation of the costs imposed could be initial criteria for evaluation. These measures would be developed further as the campaign and force experience progressed. To convert any proposed campaign objectives, lines of effort, and measures of effectiveness into action, an operational approach for naval maritime special

operations forces provides the application of special-operations capabilities to exploit Russia's maritime flanks strategically.

NAVAL SPECIAL-WARFARE OPERATIONAL APPROACH

An operational approach (what U.S. military planners call “ways”) is simply a description of the broad actions the military must take to achieve the desired objectives (known as “ends”).³⁹ This section sketches out the operational approach for naval special operations to execute a Jominian irregular-warfare campaign to achieve several competitive objectives: disrupt Russian activities occurring below the threshold of war; gain initiative in the competitive space; impose greater costs on Russian actions; and prepare the theater for potential combat operations. According to Lieutenant General James Dubik, USA (Ret.), and Nic Vincent, from a military perspective success in interstate competition requires operating in the gray zone with low-signature, nimble, and rapidly deployable forces.⁴⁰ This outlook implies using special operations forces for competition because of their low visibility, small-footprint profile, and expertise in close-in maritime and riverine access. Special operations forces and naval special warfare have powerful, flexible tools that can be integrated across the full range of conflict and operations, as part of whole-of-government efforts, and with partner nations and U.S. allies to deter Russian activities of concern.

Besides U.S. naval special-warfare units' unique capabilities in maritime close access and placement, they possess equipment ranging from a family of low-visibility, multimission surface and subsurface tactical craft to sophisticated signals and communications gear.⁴¹ The proposed irregular-warfare campaign would use a dedicated naval special warfare group and its enablers, in conjunction with other U.S. agencies to provide both cyber and ISR support. Implementing the Jominian approach advocated in and around the Baltic, Black, Caspian, and Barents and White Seas would include the following: conducting special reconnaissance to understand the maritime environment better; executing special missions for the preparation of the environment for eventual combat operations; and performing visible information operations as a subset of naval diplomatic measures to support more-cogent counter-Russia or pro-U.S. and -NATO narratives. The first two missions mentioned directly support preparing for potential combat operations, while the last contributes to competition below the threshold of conflict.

Special reconnaissance activities enabling a greater and deeper understanding of the contiguous bodies of water and their littorals along Russia's maritime periphery are a first step in developing “strategic opportunities for the U.S. and its partners.”⁴² The mission of *special reconnaissance*—defined as “reconnaissance and surveillance activities conducted as a special operation in,

but not limited to, hostile, denied, or diplomatically and politically sensitive environments to collect or verify information of strategic or operational significance”—is a core special-operations task, and naval special-warfare assets are trained and equipped to perform it in and from maritime environments.⁴³ Maritime special reconnaissance generally requires capabilities not found in the conventional force.⁴⁴ A thorough “mapping” of the Jominian maritime corridors would create greater situational awareness, with details on adversary human activities and greater data on the meteorological, hydrographic, and geographic characteristics of the respective littoral regions.⁴⁵ Extensive and comprehensive special reconnaissance of the waters along the pertinent Jominian rectangle faces—to include surface, subsurface, and coastal investigation—would lay a foundation for better knowledge of the adversary and enable a wider-ranging preparation of the environment for potential future operations, including combat if required.

For special operations forces, *preparation of the environment* is “an umbrella term for operations and activities conducted by selectively trained special operations forces to develop an environment for potential future special and conventional operations.”⁴⁶ In the European theater, naval special operations forces would prepare the environment to create conditions conducive for successful competition and other military operations on the spectrum of conflict, to include preparations to allow the U.S. military to embark quickly and successfully on combat operations if that becomes necessary.⁴⁷ Subcombat competition could focus on exposing, illuminating, and addressing Russian commercial gray-zone activities in the maritime environment. As illustration, in September 2018, Finnish police and military raided the Finnish Baltic island of Säkkiuoto. A Russian businessman from Saint Petersburg had purchased the island legally, then developed it to include nine piers, a helipad, and military-grade communications equipment.⁴⁸ While the Russian government denied ulterior motives, this type of activity easily could be highlighted within a maritime special-operations campaign for an allied national government to conduct additional action. Such activities would nest within conventional USN objectives in the European theater and enable further military and interagency actions.

This maritime preparation of the environment, led by U.S. naval special-warfare units in partnership with allies, would aim at identifying, understanding, and framing sensitive Russian maritime decisive strategic points as targets for potential follow-on actions, deterrent or otherwise. Examples of these sensitive points include Russian pipelines, undersea cables, commercial ships, fishing vessels, navigational beacons, and other objects. Preparation activities are not exclusively covert, which by their nature have minimal, if any, deterrent effect. They also encompass military-engagement and security-cooperation

activities to build relationships with critical allies and their capability and capacity to contribute to operations on the Jominian maritime template. Important partners include Finland, Sweden, the Baltic States, Poland, Romania, Bulgaria, Greece, Georgia, and Ukraine. These partners can themselves support special reconnaissance of the maritime environment around Russia to refine the location of specific targets and further develop them for additional activities. These activities align with established special-operations missions that include the reconnaissance of significant objects of interest; the tagging and tracking of significant maritime objects; and the logistics preparation for both special and conventional force arrival in a particular maritime region, to include the building of preconflict infrastructure.⁴⁹

Finally, U.S. naval special-operations activities along the northern and southern faces of the Jominian theater rectangle would enable refined and nuanced NATO information operations as part of active naval-diplomacy measures for both deterrent and coercive effect against adversarial Russian activities. If the aim of competition is to remain below the level of armed conflict, naval forces are particularly well positioned to support partners and allies, coerce adversaries, and advertise national sea power with the aim of influencing foreign leaders.⁵⁰ Special operations forces, as opposed to conventional forces, have the most important role in the spectrum of conflict short of war, at a level where the military can support and integrate with other elements of national power, especially diplomatic and information components.⁵¹

Taken together, this idea suggests that linking naval special operations forces with overt naval diplomacy in the European theater is an effective and enduring deterrence approach against a great power. This method aligns well with the concept of naval diplomacy as a “political instrument short of war” that aims to influence the “perceptions of policy-makers in hostile and friendly Powers.”⁵² As Geoffrey Till notes, naval diplomacy—what he terms *presence*—enables both coercion and coalition building.⁵³ Hence, naval special-operations activities and the presence of naval special-warfare detachments in these European littoral and riparian regions would provide opportunities for selective deterrence or compellence messages aimed at creating anxiety or uncertainty in the minds of Russian national-security decision makers and developing narratives to counter and supplant Russian propaganda and disinformation campaigns. These information operations range from publicized maritime special-operations exercises with partner nations to signal allied solidarity and interoperability, to visible maritime special operations forces boarding commercial ships with partner-nation law enforcement to demonstrate ship-interdiction capabilities. These maritime special-operations activities, often military-to-military, can be amplified by ambassadorial-level diplomatic public affairs and media

engagement to message U.S. presence and commitment to allies and partners. These actions aim to offset contrary Russian media and commercial efforts.

Overt naval special-warfare activities that are visible but have a small footprint also could reinforce some generic U.S. European Command themes, such as the benefits of NATO and European Union membership for security and economic progress, the promotion of a common Black Sea allied naval presence, freedom-of-navigation operations in support of international maritime law, and a reduction of overall Russian and allied military presence in the Arctic to prevent conflict and preserve the polar environment.⁵⁴ These overt activities, amplified by appropriate and supporting information operations, have a twofold psychological effect. One aspect strengthens allied resolve through presence, placement, and the reinforcement of regional relationships. The other side is to create uncertainty in the minds of adversary leadership, leading them to question what maritime special operations forces actually are doing in these sensitive littoral regions. For example, naval special-warfare patrol craft conducting visible and publicized operations with NATO-ally naval special operations forces in the littoral waters of the Barents and White Seas and the Baltic, Black, and Caspian Seas generates questions for Russia's decision makers about the capabilities that the United States and partners could bring to bear against it, and concern about other activities they may be performing clandestinely. Special-operations-forces activity often connotes or implies clandestine action, which, when coupled with the overt presence of naval special-warfare units and craft in a sensitive area, creates impressions that can affect Russian leaders' decision-making calculus and steer their reactions in the maritime space. The visibility of special-operations units alone may be more significant than the particular tasks they conduct.⁵⁵

Naval special-warfare forces employing a Jominian operational approach, in combination with cyber and ISR operations, offer the United States and its allies a framework for sustained contest against Russian operations and activities in Europe as part of a wider, integrated deterrence effort while preparing the theater for potential conflict scenarios. In conjunction with conventional military capabilities and coupled with U.S. efforts, naval special-warfare capabilities provide a maritime instrument for countering Russian competition and suggest a guide for action below the threshold of conflict in the European theater, particularly in an overt naval-diplomacy role. While balancing risks and escalation is essential to ensuring this approach keeps competition below the threshold of conflict, the nature of gray-zone competition suggests that deliberate, methodical, and measured efforts to move the United States from a reactive to a proactive position in Europe's competitive space can produce salutary strategic effects. It is ironic that Baron Jomini, who was concerned mostly with land-warfare theory and who served for

over five decades as a Russian general officer, offers such a promising maritime solution for Russia's nontraditional attacks on U.S. and European interests.⁵⁶

NOTES

The views expressed are those of the author and do not necessarily reflect the official policy or position of the Department of the Army, Department of Defense, or the U.S. government.

1. Baron Antoine-Henri de Jomini (1779–1869) was a contemporary of Carl von Clausewitz and a renowned nineteenth-century military thinker and theorist. His works have influenced the art of war in the American, Russian, and French militaries, the writings of maritime strategist Alfred Thayer Mahan, and airpower theorist Giulio Douhet. See the chapter on Jomini in Kevin D. Stringer, *Swiss-Made Heroes: Profiles in Military Leadership* (Ashland, OR: Hellgate, 2012).
2. *Rectangular template* is my own descriptive term for Jomini's geographic concepts for how to control a combat theater.
3. Kevin D. Stringer, "The Arctic Domain: A Narrow Niche for Joint Special Operations Forces," *Joint Force Quarterly* 78, no. 3 (3rd Quarter 2015), pp. 24–31; Ronald O'Rourke et al., *Changes in the Arctic: Background and Issues for Congress*, CRS Report (Washington, DC: Congressional Research Service, 28 April 2020).
4. Don Thieme, "The Baltic, Poland, and President Trump's Warsaw Declaration," *Naval War College Review* 71, no. 2 (Spring 2018), pp. 149–53.
5. Magnus Nordenman, *The Naval Alliance: Preparing NATO for a Maritime Century* (Washington, DC: Atlantic Council, 2015); Stanislav Pritchin, "Russia's Caspian Policy," *Russian Analytical Digest*, no. 235 (18 April 2019); Nurlan Aliyev, "Russia's Military Capabilities in the Caspian," *Central Asian Analyst*, 21 February 2019, www.cacianalyst.org/; G. Chufrin, ed., *The Security of the Caspian Sea Region* (Oxford, U.K.: Oxford Univ. Press, 2001).
6. "Statement of General Tod D. Wolters, United States Air Force, Commander, United States European Command, February 25, 2020," *United States Senate Committee on Armed Services*, www.armed-services.senate.gov/. Emphasis in original.
7. This approach aligns with the Department of Defense's strategic intent to "seize the initiative and execute *proactive, enduring* campaigns employing [irregular warfare] capabilities to expand the competitive space, shape the environment, and prepare for escalation to conflict, if required," as found in U.S. Defense Dept., *Summary of the Irregular Warfare Annex to the National Defense Strategy* (Washington, DC: 2020). Emphasis in original.
8. Alexander Powell, *SOF in Competition below Armed Conflict: A Synthesis of CNA Work* (Arlington, VA: CNA, September 2020), p. 45.
9. U.S. Defense Dept., *Summary of the 2018 National Defense Strategy of the United States of America: Sharpening the American Military's Competitive Edge* (Washington, DC: Secretary of Defense, 20 January 2018), p. 1.
10. White House, *Interim National Security Strategic Guidance* (Washington, DC: 2021), p. 20.
11. Michael J. Mazarr et al., *Understanding the Emerging Era of International Competition: Theoretical and Historical Perspectives* (Santa Monica, CA: RAND, 2018).
12. U.S. Defense Dept., *Competition Continuum*, JDN 1-19 (Washington, DC: Joint Chiefs, 3 June 2019).
13. Ali Wyne, "America's Blind Ambition Could Make It a Victim of Global Competition," *National Interest*, 11 February 2019, nationalinterest.org/.
14. James M. Dubik and Nic Vincent, *America's Global Competitions: The Gray Zone in Context* (Washington, DC: Institute for the Study of War, February 2018).
15. U.S. Defense Dept., *Competition Continuum*.
16. Ibid.

17. Rod Thornton and Manos Karagiannis, "The Russian Threat to the Baltic States: The Problems of Shaping Local Defense Mechanisms," *Journal of Slavic Military Studies* 29, no. 3 (2016), pp. 331–51.
18. "Statement of General Tod D. Wolters."
19. Marcel H. Van Herpen, *Putin's Wars: The Rise of Russia's New Imperialism* (Lanham, MD: Rowman & Littlefield, 2014), p. 282.
20. David V. Gioe, Richard Lovering, and Tyler Pachesny, "The Soviet Legacy of Russian Active Measures: New Vodka from Old Stills?," *International Journal of Intelligence and Counterintelligence* 33, no. 3 (2020), pp. 514–39.
21. Van Herpen, *Putin's Wars*, pp. 207–208, 219.
22. Lionel Beehner and Liam Collins, *Dangerous Myths: How the Crisis in Ukraine Explains Future Great Power Conflict* (West Point, NY: Modern War Institute, 18 August 2020).
23. Geraint Alun Hughes, "Syria and the Perils of Proxy Warfare," *Small Wars & Insurgencies* 25, no. 3 (2014), pp. 522–38.
24. Andrew Linder, "Russian Private Military Companies in Syria and Beyond," *New Perspectives in Foreign Policy* 16 (Fall 2018).
25. Brian Katz and Joseph Bermudez, "Moscow's Next Front: Russia's Expanding Military Footprint in Libya," *Center for Strategic and International Studies*, 17 June 2020, csis.org/.
26. Martin Murphy and Gary Schaub Jr., "'Sea of Peace' or Sea of War: Russian Maritime Hybrid Warfare in the Baltic Sea," *Naval War College Review* 71, no. 2 (Spring 2018), pp. 123–47.
27. Valery Gerasimov, "The Value of Science Is in the Foresight: New Challenges Demand Rethinking the Forms and Methods of Carrying Out Combat Operations [in Russian]," *Military-Industrial Kurier*, 27 February 2013, trans. Robert Coalson, *Military Review* 96, no. 1 (2016).
28. Baron de Jomini, *Summary of the Art of War*, trans. G. H. Mendell [Capt., USA] and W. P. Craighill [Lt., USA] (Philadelphia, PA: J. B. Lippincott, 1862).
29. Many thanks to an anonymous reviewer who edited and revised my initial thoughts.
30. Jomini, *Summary of the Art of War*.
31. See Beehner and Collins, *Dangerous Myths*, and Victoria Barber, Andrew Koch, and Kaitlyn Neuberger, "Russian Hybrid Warfare" (master's capstone, Fletcher School, Tufts Univ., June 2017).
32. Crane Brinton, Gordon A. Craig, and Felix Gilbert, "Jomini," in *Makers of Modern Strategy: Military Thought from Machiavelli to Hitler*, ed. Edward Mead Earle (Princeton, NJ: Princeton Univ. Press, 1973), pp. 88–89.
33. Jomini, *Summary of the Art of War*, p. 74.
34. John Shy, "Jomini," in *Makers of Modern Strategy from Machiavelli to the Nuclear Age*, ed. Peter Paret, Gordon A. Craig, and Felix Gilbert (Princeton, NJ: Princeton Univ. Press, 1986), p. 175; Jomini, *Summary of the Art of War*, p. 69.
35. Jomini, *Summary of the Art of War*, pp. 73, 79–80, 85–86, 91.
36. Shy, "Jomini," p. 154.
37. Jomini, *Summary of the Art of War*, p. 250.
38. Brinton, Craig, and Gilbert, "Jomini," p. 89.
39. U.S. Defense Dept., *Joint Planning*, JP 5-0 (Washington, DC: Joint Staff, 16 June 2017), pp. IV-8, IV-16.
40. Dubik and Vincent, *America's Global Competitions*.
41. Collin Green [Rear Adm., USN], "Remarks Delivered at Special Operations Forces Industry Conference (SOFIC)" (13 May 2020, virtual).
42. U.S. Defense Dept., *Competition Continuum*, p. 8.
43. NATO, *Allied Joint Doctrine for Special Operations*, AJP 3.5, ed. B, ver. 1 (Brussels: NATO Standardization Office, August 2019), pp. 8–9.
44. U.S. Defense Dept., *Special Operations*, JP 3-05 (Washington, DC: Joint Staff, 16 July 2014), p. x.
45. Stringer, "The Arctic Domain," pp. 24–31.
46. *DOD Dictionary of Military and Associated Terms* (Washington, DC: Joint Staff, June 2020), s.v. "preparation of the environment."
47. Joint Special Operations Univ., *Special Operations Forces Reference Manual*, 4th ed. (MacDill AFB, FL: JSOU Press, 2015), pp. 1–8.

48. Andrew Higgins, "On a Tiny Finnish Island, a Helipad, 9 Piers—and the Russian Military?," *New York Times*, 31 October 2018, nytimes.com/.
49. U.S. Defense Dept., *Special Operations*, p. II-5.
50. Hedley Bull, "Sea Power and Political Influence," in *Power at Sea*, pt. 1, *The New Environment*, Adelphi Paper 122 (London: International Institute for Strategic Studies, 1976); J. J. Widen, "Naval Diplomacy—a Theoretical Approach," *Diplomacy & Statecraft* 22 (2011), pp. 715–33.
51. Robert G. Spulak, *A Theory of Special Operations: The Origin, Qualities, and Use of SOF* (MacDill AFB, FL: JSOU Press, 2001), p. 22; Phillip Lohaus, "Special Operations Forces in the Gray Zone: An Operational Framework for Using Special Operations Forces in the Space between War and Peace," *Special Operations Journal* 2, no. 2 (2016), pp. 75–91.
52. Widen, "Naval Diplomacy," pp. 715–33, esp. 717, 719.
53. Geoffrey Till, *Seapower: A Guide for the Twentieth Century*, 2nd ed. (New York: Routledge, 2009), pp. 259–60.
54. Corina Rebegea, *The Black Sea as a Battleground for Information Warfare: A View from Bucharest* (Philadelphia, PA: Foreign Policy Research Institute, 23 March 2017); Deborah Sanders, *Cooperation between European Small Navies in the Black Sea: Potential for Alternative Naval Operations* (Berlin: Heinrich Böll Stiftung, 21 January 2020).
55. Edward N. Luttwak, *The Political Uses of Sea Power* (Baltimore, MD: Johns Hopkins Univ. Press, 1975), p. 39.
56. Stringer, *Swiss-Made Heroes*, pp. 60–61; Andrej N. Merzalow and Ljudmila A. Merzalowa, *Antoine-Henri Jomini—der Begründer der wissenschaftlichen Militärtheorie: Eine Bewertung aus russischer Sicht* (Zurich, Switz.: vdf Hochschulverlag, 2004).

THE LIMITS OF SEA POWER

Jakub J. Grygiel

The most significant clashes between great powers are occurring on land. Russia's ongoing war in Ukraine, the rivalry between Iran and the United States and its regional allies, the lengthy conflict in Afghanistan, and the expansion of China's influence along its One Belt, One Road (OBOR) vectors—these are just a few illustrations of the persistent vying for continental political control and influence. For a maritime power such as the United States, these conflicts—with the exception of China's naval actions in the South China Sea—present a peculiar and recurrent challenge, because they take place on continental Eurasia and not on the sea. The United States needs superior naval power and command over maritime access routes to be able to project its will across the oceans. But the other players—from Russia to China and Iran—enjoy internal, continental lines of communication that, while perhaps not as cost-effective as maritime routes, can be shorter and are less vulnerable to seaborne predations. As a result, from the perspective of the United States, sea power is necessary but also has serious limits.

The key question for any maritime power is how to translate its control over the sea into political influence over the land. This conversion of sea power into strategic effects on the continent is neither guaranteed nor easy. Sailing undisturbed on the oceans does not mean that a sea power, such as the United States, has political influence on land; control of the sea does not yield power automatically over the land. This recurrent question and the attendant challenge are not insurmountable,

of course, and throughout history maritime states have pursued strategies to alleviate the limits of sea power and use their maritime superiority to shape political dynamics on land. Blockading their rivals, controlling inland seas, keeping a substantial continental presence, seeking the support of proxy forces and land-based allies, and—on a grand-strategy

Jakub J. Grygiel is a professor in the Department of Politics at the Catholic University of America (Washington, DC), a senior adviser at The Marathon Initiative, and a visiting fellow at the Hoover Institution.

© 2021 by Jakub J. Grygiel
Naval War College Review, Autumn 2021, Vol. 74, No. 4

level—managing rather than defeating the continental rival are some of the approaches that sea powers have adopted to deal with their own limits. But these limits are enduring, requiring continued attention; they never can be overcome fully—they only can be mitigated.

Even raising the possibility that sea powers have inherent weaknesses goes against a Mahan-inspired partiality for the historical superiority of maritime states. Captain (later Admiral) Alfred Thayer Mahan, USN, was the “evangelist of sea power,” writing for a rising maritime power and passionately trying to convince his American audience of the greatness of sea power and the importance of having a navy.¹ He pointed out persuasively that sea-lanes were of greater strategic value than land routes, and thereby highlighted the importance of who controlled them. “Land carriage . . . toils enviously but hopelessly behind, vainly seeking to replace and supplant the royal highway of nature’s own making.”² Several decades before Mahan, John Adams had summed up this great faith in maritime power eloquently. In an 1802 letter, he wrote,

The council which Themistocles gave to Athens—Pompey to Rome—Cromwell to England—DeWitt to Holland—and Colbert to France, I have always given, and shall continue to give to my countrymen—That as the great questions of commerce between nations and empires must be decided by a military marine, and war or peace are determined by sea, all reasonable encouragement should be given to a navy. The trident of Neptune is the sceptre of the world.³

Undoubtedly, control of the sea is a precondition for any far-reaching policy that a power such as the United States may want to pursue; without it, the United States is severed from the rest of the world, turning into an isolated, continental island, not only impotent but vulnerable to the seaborne attacks of adversaries.⁴ Moreover, sea powers have several advantages over land powers. The pressure on their borders tends to be lower than for their continental rivals; in the purest example, islands are more secure than landlocked countries. They have access to, and can control, the maritime arteries of regional and global commerce, making it possible for them to influence the economic welfare of others. They tend to have a more expansive outlook, thinking of distant lands and seeking faraway markets. They have the means to attack a rival state in an unexpected location on its periphery, outflanking it and distracting it from its main vector of expansion. And because of their combination of range with relative security, sea powers tend to enjoy a diplomatic flexibility that a land power, surrounded by enduring enemies, lacks. Mahan, therefore, was not wrong when he argued—and in doing so incited envy among the leaders of land powers such as late-nineteenth-century Germany—that the great powers in history tended to be sea powers. Or, as Paul Kennedy qualified it, writing of the late nineteenth century, “Sea power, as represented by a large surface fleet, commercial activity, naval bases at home and abroad, remained still the best indicator of the

relative national power of all those nations who wished to play on the world stage.”⁵ And U.S. history continues to demonstrate the benefits of being a sea power with access to the Pacific and Atlantic Oceans and the markets located on their shores.

But sea powers also have many handicaps that often are forgotten, resulting in a dangerous overestimation of their safety, influence, and staying power in a competitive world. From the Athenian Pericles to Germany’s Admiral Alfred von Tirpitz, many political leaders placed enormous confidence in the ability of maritime command to protect their countries and of naval power to defeat their rivals.⁶ It gave them a false sense of power. A more clear-eyed assessment of power—one less enamored of the grandeur associated with naval might—often revealed that such hope was unwarranted, and that it often ended up having tragic results for the naval aspirant or even the established sea power.

Two weaknesses—or enduring challenges that need to be addressed—have characterized all sea powers in history. First, to be competitive, sea powers have to convert their command of the seas into political effects on land—a feat whose accomplishment is not automatic and requires certain conditions that often are outside the sea power’s control. Second, because of their flexibility in alliances and basing, sea powers suffer from a credibility gap that weakens their staying power in faraway lands.

Both of these weaknesses revolve around a core problem: that politics occur on land, where people live, and commanding the seas does not guarantee the desired political outcomes on land.⁷ A purely continental school of strategy—if it emphasizes that the only political, economic, and military dynamics that matter occur on land—is certainly too dismissive of the strategic benefits of sea power.⁸ But a purely maritime-power grand strategy—if it does not consider how to address the fundamental challenge of how to use command of the sea to achieve political outcomes on land and does not deal with the inherent limitations of sea power—is likely to fail. In sum, political outcomes are achieved on land, and sea power, under certain conditions, can be a useful tool.⁹ Julian S. Corbett, the British naval strategist concerned with how to use maritime power to influence political dynamics on the European continent, wrote that “[s]ince men live upon the land and not upon the sea, great issues between nations at war have always been decided—except in the rarest cases—either by what your army can do against your enemy’s territory and national life, or else by the fear of what the fleet makes it possible for your army to do.”¹⁰

FROM SEA TO LAND

The first weakness—the challenge of converting sea power into political effect—is perhaps the most pervasive, and it becomes particularly evident when a sea

power competes with a continental rival. Translating superiority on the seas into political influence on land is neither automatic nor dependent exclusively on the sea power's skills. In fact, the main determinant of this weakness lies in the nature of the sea power's rival, particularly its exposure to and dependence on the sea. As James E. S. Cable put it, the "elephant is not vulnerable to the crocodile until his trunk dangles near the water's edge."¹¹ The less reliant the rival is on the sea, the less vulnerable it is to a maritime blockade, for example. In such cases, from the sea power's point of view, its command of the seas is less useful and offers less leverage than it might wish.

Historically, the advantage of sea powers stemmed from the cost-effectiveness of maritime navigation and the seaborne transport of goods and forces, as Mahan suggested in the quote given previously. Venice, for example, benefited from an improvement in navigation in the Mediterranean from the eleventh century on, driven by advances in shipbuilding, the enhanced security of key maritime passages, and a growing demand for high-value goods, which combined to give greater weight to sea-lanes over land routes. Hence, the First Crusade at the end of the eleventh century went mostly by land through Constantinople to Jerusalem, while the Third Crusade at the end of the twelfth century proceeded more by sea, as did the notorious Fourth Crusade in the early thirteenth century.¹² Control of the sea, then, bestowed something of enormous value on Venice, or any other power capable of holding it, because it provided leverage over other polities that relied increasingly on maritime commerce and transport.

A similar dynamic favored Great Britain in the nineteenth century, allowing it to turn its maritime dominion into diplomatic supremacy. Like Venice, Great Britain rose to great power

in an era of primitive overland communications. There were few all-weather roads, no motor road vehicles, and only the beginnings of a railway grid. Large-scale movement of people and bulky freight overland, even for relatively short distances, was slow and costly. The advantage of water-borne transport was nearly everywhere decisive. Under these conditions blockade of a country's ports could be a paralyzing experience. Furthermore, it was generally quicker and cheaper in those days to travel around Europe than to cross it. Though the island of Britain lies on the periphery of Europe, the superior mobility of movement by sea rendered the British position strategically central vis-à-vis every continental country, so long as the British Navy controlled the sea.¹³

But the strategic advantage of the seas ebbs and flows in history. Land communications are not perennially inferior and sea-lanes are not inexorably ascendant in strategic value. In some historical periods, a sea power may compete with a rival land power that does not rely heavily on the seas, and therefore is less vulnerable to the sea power. Therefore the ability of a maritime state to wield influence is diminished considerably by factors that are outside its control.

The possibility that sea power would decrease in strategic relevance was envisaged by the two most famous geopolitical thinkers, Sir Halford J. Mackinder and Admiral Mahan. Both argued broadly that the sea powers on the outer edges of Eurasia were outflanking the traditional potentates on the landmass. But access to oceanic routes combined with the maintenance of a large navy constituted a form of power that could be withstood, and perhaps at some point challenged, by a large, well-organized power located in the continental core. The principal threat to maritime dominance therefore was not another power with a large navy (although that, of course, could be a cause of intramaritime rivalry) but a continental center, impenetrable to a sea power's sorties, united by well-functioning land routes, and economically self-sufficient. Another way to describe this nineteenth-century competition is that it was between steamships and railroads, between the efficiency of naval navigation and the speed of land transport. But the general principle has applied throughout history: control of the sea matters in a competition between sea and land powers only when maritime routes are vital to the latter.

The corollary of this principle is that sea powers have a strong interest in preventing the improvement of land routes that could unify a continental power or, more broadly, that would shift commerce away from the sea. But at the same time they have a limited ability to shape this balance of advantages between land and sea routes. They certainly may try to obstruct the development of continental commerce and to compensate with technological innovations in maritime navigation, but the outcome of this balance does not lie exclusively in their own hands. The land power can engage in efforts, such as railroad building in nineteenth-century continental Europe or the development of pipelines and roads across Eurasia in more-recent decades (e.g., China's OBOR efforts), that are to a large degree impervious to the sea power's influence and may result in a considerable diminishment of its grip over the continent.¹⁴

As the continental power's dependence on and vulnerability to the sea decrease, the maritime power has to figure out other ways to exercise pressure on land. As a tool, a naval blockade of an enemy is very selective (targeting a specific power and not others) and low risk (easy to turn on and off); however, it works only if the targeted state relies on the sea.¹⁵ And in any case, while a naval blockade can starve a land power of vital resources, hurting its economy and society, on its own it cannot dislodge the rival from a piece of territory or defeat it comprehensively. The naval power may hope to be able to change the enemy's behavior by merely showing its ships offshore, coercing the rival by the promise of punishment, especially along its coastline.¹⁶ Modern airpower extends the range of naval forces, making targets deep inside the continental mass vulnerable and reinforcing the threat of a seaborne standoff attack. But, like a naval-artillery

barrage, this is an exercise in targeting that may have limited lasting effects on local political dynamics.¹⁷ In the end, there may be a need to inflict a defeat on the continental power, or at least to establish control over a coastal area, and to achieve such an objective airpower and ships floating at a distance do not suffice.¹⁸ The mere control of sea-lanes and the threat of a maritime blockade are insufficient to influence the behavior of a continental rival that has a limited exposure to and reliance on the sea.

To penetrate the rival state's continental shell and have a significant effect on its political and economic dynamics, sea powers historically had three main options: amphibious assaults (resulting in the establishment of a presence) on the enemy's coastal regions, pressure on the rival's land borders, and control over internal seas.¹⁹

Continental Military Presence

The first option is perhaps the most visible, because it involves fleets delivering forces onto shore, followed by sieges of cities and other land battles. Usually, however, such an attack on a coastal fortress or port has been extremely limited in geographic scope, and has not been followed by a massive and lengthy invasion of the rival's territory. Most historical maritime powers, from Venice to Great Britain, focused on ports and other strategic outposts along sea-lanes; they were aware that territorial control required manpower and resources that their states did not have and that were better used on the sea in any case. Instead, the sea power's purpose was to deprive a rival of a safe harbor so it could damage the rival's fleet, reduce its seaborne commerce by attrition, or both. Of course, another gain was a base for its own use. Only rarely, however, could it actually overthrow the hostile polity.²⁰

A limited continental commitment permitted the sea power to maintain a focus on the maritime realm, keeping control of the sea-lanes and accessing distant markets and cities. But the disadvantage was that it had a narrow effect on the hostile land power, and in fact the absence of a long-term presence on the continent exposed the sea power to the rise of land threats that remained unchecked until the only option to deal with them was appeasement.²¹ For instance, with the exception of the Fourth Crusade's targeting the imperial remnants of Byzantium, Venice never fully defeated the rival continental power in question, such as the Ottoman Empire or Hungary. It could thwart a competitor from accessing and controlling a sliver of the sea, or it could inflict a punishing raid on an outpost that was within easy reach of the sea, but it could not overpower its enemy.²² Land-based allies are a way for sea powers to compensate for a limited continental commitment, but the strength of such alliances is tied to the sea power's guarantee to the allies, demonstrated by its durable physical presence. These land-based allies thus are not an alternative to a sea power's continental commitment but an integral part of it.

Continental powers can be defeated only by depriving them of land, conquering their territories piecemeal, and weakening and devastating their armies through battles.²³ As a result, maritime powers, whose efforts focus on the sea and who often are very sensitive to casualties, are more inclined to use diplomacy to conciliate their rivals rather than to embark on a land expedition aimed at territorial conquest and defeat of their enemies. The inherent limitations they have on land lead them toward a grand strategy of managing, rather than defeating, their continental rivals.

Pressure on the Rival's Land Frontier

Creating pressure along the rival's land borders is another option at the disposal of the sea power. The goal is to inflict costs on the continental enemy, most importantly to redirect its attention from the sea to its immediate neighbors along a land frontier.²⁴ Land borders have a powerful diversionary effect because they shape the security of the state's homeland most immediately. Mahan went so far as to suggest "the inability of a state with even a single continental frontier to compete in naval development with one that is insular, although of smaller populations and resources," indicating the enormous vulnerability any state experiences on its land side.²⁵ A sea power, then, can take advantage of this weakness of the enemy by generating pressure on its rival's land frontier. But usually, because of logistical difficulties or a lack of suitable resources, a sea power pursues such a strategy indirectly, through the forces of other states or groups. Such an approach requires diplomacy—that is, some form of bribery or subsidies—that can convince the rival's neighbors to push on the land frontier. Or, in some other cases, the sea power can create conditions for an exacerbated rivalry on land among various powers by inciting conflicts and skillfully shifting its support from one side to the other.

Yet ultimately, the outcome is in the hands of other actors, leaving the sea power at their mercy and requiring a constant and skillful diplomatic effort to keep them either on its side or in conflict with each other. At any point, these powers jockeying for control on land can reach a deal to end their conflict, leaving the sea power without a means to exercise influence on the continent. The geopolitical nightmare for Great Britain, for instance, was the rise of a continental alliance—a "thievish partnership" between France and Russia—that would cut Britain off from Europe and challenge its interests in the Mediterranean and the Middle East.²⁶ During World War II, the great fear in London and Washington was that Stalin would reach a separate peace with Hitler—another Molotov-Ribbentrop Pact—leaving the maritime powers without a way to exert pressure on Germany's eastern land borders.²⁷ Similarly, today the great geopolitical question for the United States is whether Russia will be more aligned with China—establishing a continental entente—rather than maintaining a lengthy land frontier of

friction. In brief, relying on another power to establish lasting sources of continental diversion of a rival is a sometimes necessary but potentially precarious strategy for the sea power.

Control of Internal Seas

The third way for a sea power to influence a land rival's actions is to control the internal seas of and the "brown waters" immediately adjacent to the opponent. These are waters that either are surrounded by land or pierce the continental shell, in the form of bays or channels between coasts and nearby islands. Each bay, inlet, or river can become a "dagger into the interior."²⁸ For the land power, they function as internal routes, linking one region to another through waterways rather than roads, on top of serving as access points to the wider seas. A sea power that establishes naval superiority in such waters can control the movements along the coast and even riverine trade, and by doing so it can impose costs on the rival, translating the power of the navy into economic and political effects on land.

Throughout history, rivers have enabled crucial extensions of sea power, allowing a maritime state to extend influence along the internal arteries of commerce, where a large percentage of the local population also tended to live (e.g., the Congo River for the Belgians, the Red [or Hong] River for the French in Indochina).²⁹ This is a lesson that Mahan drew from history as well as from his personal experience as an officer in the Union navy during the American Civil War. In his first book, *The Gulf and Inland Waters* (1883), he describes how the Union's control of coastal waters from Key West to the outlet of the Rio Grande and its penetration along the Mississippi River hemmed in the Confederate states.³⁰ These Union naval efforts, on top of imposing serious economic costs through a blockade of the South, fractured the enemy's territorial integrity.

But a brown-water strategy also reveals a sea power's weakness, because it is an imperfect substitute for an intervention and presence on land. It works best as a joint operation in conjunction with land forces that sea powers, as mentioned earlier, often are reluctant to use. Such a limited, or supporting, role was assigned to U.S. naval forces in the Mediterranean during the early Cold War, to back the main efforts of allied forces in a land war in Europe and, in the best-case scenario, to open a second front on the southern flank of the USSR to divert some of the Soviet forces away from their westward march.³¹

Moreover, while the naval power can break a continental state's territorial integrity by establishing naval superiority in these brown waters, the land power equally can deny control of these waters to its rival without having to build a matching fleet.³² Often the nature of internal waters, whether bays or larger seas circumscribed by land, is such that they can be controlled through a continental

strategy of dominating key pieces of real estate. The positioning of land forces, and in some cases small littoral fleets, on strategic choke points (such as the Gallipoli Peninsula on the Dardanelles Strait or the deeply embayed Dalmatian coast) can serve to harass, and even deny passage to, the sea power's navy. Such a continental strategy creates bastions along the littoral that constrain the naval movements of a maritime rival. In the most modern iteration of this approach, a land power such as Russia or China can deny access to a maritime power through the development of weapons that from the coast can threaten to inflict unacceptable costs on a hostile naval force (the so-called antiaccess/area-denial approach).³³

An even more ambitious strategy for a land power is to conquer the coast surrounding the sea, challenging the rival state's naval superiority by denying it access to ports and safe harbors. As Napoléon allegedly said in 1806, his goal was "to conquer the sea through the power of land."³⁴ Similarly, the ancient Roman Republic pursued a continental, rather than a thalassocentric, strategy, extending control over the circumference of the Mediterranean Sea.³⁵ The Russian empire also sought to enclose the Black and Baltic Seas from the seventeenth century on.³⁶ This is a form of sea power by coastal control that continental powers can achieve despite the rival's naval superiority. In fact, naval superiority loses its effectiveness in semienclosed seas.³⁷ The competition among great powers as a struggle of navies versus land forces was made more pronounced—while perhaps benefiting the land powers more—by the gunpowder revolution and the advent of coastal artillery from the fifteenth century on.³⁸ Another way to put this is that a land power can exercise control over internal or semienclosed seas without having naval superiority; it can establish *control* of the sea without having *command* of it.

Sea powers' weakness, then, is that they may be unable to translate their superiority on the seas into political effects on land. And if they cannot project influence on land or if they control sea-lanes that are irrelevant to their rivals, then their naval capability is an expensive, capital-intensive resource that is of but limited use in statecraft. It can bring them wealth and even protect them from potentially hostile forces coming from the sea, but beyond this limited defensive role it has little influence over the land powers. Hence, Rome succeeded in preventing an attack on its home territory from Macedonia, an ally of the Carthaginian Hannibal, simply by positioning a naval squadron in the Adriatic near Brindisi, so that "not a soldier of the phalanxes ever set foot in Italy."³⁹ But such a show of force is more useful to prevent an attack than to force the rival to accept more-onerous conditions; it is a tool of prevention and deterrence, not of compulsion. As illustrated by the fifth-century BC war between Athens and Sparta, control of the sea allows the maritime power to survive, but it does not suffice as a means to defeat the land rival.⁴⁰

SEA-POWER FLEXIBILITY AND DIPLOMATIC PERFIDY

Sea powers face a second considerable limitation. Since they are blessed with many strategic options of where to project their force, this flexibility decreases the credibility of their staying power in any given location.⁴¹ This is what the English philosopher and statesman Francis Bacon suggested, perhaps inadvertently, when he wrote that “he that commands the sea is at great liberty and may take as much or as little of the war as he will.”⁴² The relative ease of movement that maritime powers have—for instance, to show up in distant places through multiple sea routes—bestows an advantage over a land power that must focus on its immediate neighbors.⁴³ The American political scientist Nicholas J. Spykman observed as much when he envisioned the nature of continental expansion as a series of concentric circles, made predictable in their sequencing by the necessary contiguity of territorial control. Maritime powers can hop from point to point, skipping difficult-to-control outposts or changing their market outlets.⁴⁴ Hence, as the American strategic theorist Admiral J. C. Wylie, USN, described it, “the sailor or airman thinks in terms of an entire world, [while] the soldier at work thinks in terms of theaters, in terms of campaigns, or in terms of battles.”⁴⁵

But this tactical luxury of high mobility has diplomatic costs. The possibility of moving away with little effort also can translate into an easy exit for a maritime power. This flexibility can be interpreted as fecklessness. As a result, every time a maritime power establishes a presence on a distant coast or island, it does so under the shadow of doubt regarding the strength of its long-term commitment. And even when a sea power is locked in a relentless competition with a continental rival, its limitations mentioned earlier push it toward a policy of managing the rival—which at times may include appeasing and even aligning with it. The difficulty that sea powers have in defeating a continental power makes them *at least seem* unreliable to other polities that may be in the path of a given land power’s expansionistic impulses. Unreliability can translate into diplomatic perfidy, with the sea power committing to land-based alliances but lacking either the capacity to protect allies fully from their continental rival or the will to devote sufficient resources to defeat the enemy.

The simplest geographic variable—distance—affects not just the ability to deliver power (the effect of the so-called power gradient: the farther the projection of power, the more costly and less effective it is) but also credibility. Venice, for instance, had an easier time convincing its rivals of its commitment to maintaining a monopoly over trade at the nearby outlet of the Po River than it did of its intention to maintain its long-term presence in the Aegean Sea and the eastern Mediterranean islands. Maintaining its *stato da mar* possessions in the Mediterranean required constant efforts and repeated

reconquests. Rebellious indigenous populations (e.g., in Crete) may have calculated—like every guerrilla force in history—that their commitment to their own islands was infinitely firmer than that of the distant Venetians.⁴⁶

The relative weakness of credibility consumes resources because sea powers have to use force constantly to demonstrate their willingness to stay in a distant place. Thus, being a sea power is an expensive proposition, not only because of the costs associated with maintaining a superior naval force, but also because of the unrelenting demands to show presence in faraway lands, to maintain custody over vital ports, and to respond to recurrent mutinies in distant outposts.

The protection the seas offer gives the maritime power the leeway to abandon allies without suffering a dramatic loss of security. Whether the allies actually are abandoned is less relevant than the reputation for unreliability that attaches to a sea power. It was just such a reputation that gave England the moniker “Perfidious Albion.” As seventeenth-century French bishop Jacques-Bénigne Bossuet put it in a sermon, “England, perfidious England, which the ramparts of her seas made inaccessible to the Romans.”⁴⁷ The security that the sea provides goes hand in hand with a latent detachment—which others often interpret as perfidy.

The grip of sea powers over the continents is precarious, even when they dominate the oceans. They can endure protracted great-power competitions, win wars, accumulate the most fabulous fortunes, establish footholds in the farthest ends of the earth, and even become objects of jealous emulation for states locked in a continental bastion. But they also have serious limitations that stem from their very nature as masters of the seas, because their maritime strength has limited effects on land. There are, of course, answers to these constraints, ranging from vying for control of inland seas to keeping some presence on the continent, but they only mitigate the limitations, which remain as enduring features of maritime powers. The American historian Theodore Ropp allegedly would walk into his classroom, point to a world map, and announce to his students that “everything blue belongs to us.” The problem, of course, was how to translate such control of the “blue” into a victory that included control over the “brown” and the “green.”⁴⁸

The logical conclusion of this analysis of a sea power’s limits is that two conditions must be present (although not necessarily simultaneously) for a sea power to have an effective strategy and to compete successfully with a land rival. First, the sea power must maintain a continental presence.⁴⁹ The extent and scope of that presence will vary, as they necessarily are linked to the peculiarities of the moment; the effort may require massive physical presence (e.g., American involvement in the European campaign in World War II), aid to

guerrillas (e.g., the British approach in the early-nineteenth-century Peninsular War), or large bases and powerful allies (e.g., the late-twentieth-century U.S. approach). But without such a presence, the translation of maritime power into continental influence is sporadic at best and impossible at worst.

The second condition is that the continental rival must be exposed to the sea and be vulnerable to a threat of disruption of its access to sea-lanes. The assessment of this second condition should shape the sea power's efforts on the first condition; the less vulnerable to the sea the land power is, the greater the necessity for the sea power to have a continental presence. For example, the USSR was not very dependent on maritime commerce, and thus was less susceptible to the threat of a naval blockade. Moreover, its main vectors of expansion were on the Eurasian landmass, with internal lines of communication, and hence its efforts were less vulnerable to Western maritime interdiction. Thus, the United States had to have a large continental presence in Europe to exercise deterrence and influence Soviet behavior. Now, China's economy is more vulnerable to the sea, and an American naval presence demonstrating our command of the seas is our primary effort at affecting its behavior. But if Beijing firms up its control over land routes linking China with the rest of Eurasia, creating a continental core, American naval forces floating in the Pacific Ocean will have considerably less effect on its decisions and behavior.

Eventually, the risk all sea powers face is that they will end up like the French man-of-war positioned off the African coast described by the Polish-British writer Joseph Conrad. "In the empty immensity of earth, sky, and water, there she was, incomprehensible, firing into a continent." Nothing happened, of course, because "nothing could happen," even though there must have been a "camp of natives . . . hidden out of sight somewhere."⁵⁰ "Firing into the continent" is an activity that may give the impression of might, but in fact has little impact.

NOTES

1. Margaret Tuttle Sprout, "Mahan: Evangelist of Sea Power," in *Makers of Modern Strategy: Military Thought from Machiavelli to Hitler*, ed. Edward Meade Earle (Princeton, NJ: Princeton Univ. Press, 1943), pp. 415–45.
2. Alfred Thayer Mahan [Capt., USN], *The Interest of America in Sea Power, Present and Future* (Boston: Little, Brown, 1917), p. 51.
3. John Adams to Capt. Thomas Truxtun, 30 November 1802, in *Naval Documents Related to the Quasi-War between the United States and France* (Washington, DC: U.S. Government Printing Office, 1935–38), vol. 5, p. 175.
4. Sea power is the great enabler, "the midwife to victory." Colin S. Gray, *The Leverage of Sea Power: The Strategic Advantage of Navies in War* (New York: Free Press, 1992), p. 277.
5. Paul Kennedy, "The Sea and Seapower within the International System," in *The Modern World = La période contemporaine*, ed.

- N. A. M. Rodger, unnumbered vol. 4 of *The Sea in History = La mer dans l'histoire*, ed. Christian Buchet (Rochester, NY: Boydell & Brewer, 2021), p. 7.
6. In Pericles's case, his strategy was grounded in the belief that Athens could withstand recurrent Spartan assaults on land by holding to its maritime empire, and victory would come when Sparta realized the futility of its annual incursion in Attica. It was a passive strategy, counting on the self-inflicted costs to Sparta and the willingness and capacity of the Spartan leadership to calculate these costs and stop its offensive against Athens. In brief, it elevated Athenian command of the seas to the principal tool that brought wealth and security to Athens and would defeat Spartan land power without having to engage it directly. It was a strategy of survival but not of victory. Similarly, overly optimistic beliefs in the superior diplomatic power of navies have characterized the policies of many leaders; "policy makers expected greater international advantages from their naval demonstrations, mobilizations, and extra building programmes than they ever received." In fact, even toward weaker states, sea power often has brought few tangible benefits. A case in point was the efforts of several European great powers to influence the decaying Ottoman state through "frequent and sometimes quite useless naval cavortings off her coasts." C. I. Hamilton, "Naval Power and Diplomacy in the Nineteenth Century," *Journal of Strategic Studies* 3, no. 1 (1980), p. 77.
 7. An early critic of an overly strong faith in sea power was Fred Jane, who devoted a whole book to examining the "heresies of sea power." His criticism was centered mostly on the tactical aspects of the principles of naval power (e.g., arguing that the Mahanian principle of concentration of force did not apply in every case of naval history), and more broadly served as a warning against a belief that sea power was the key to victory in war and great-power competition. Fred T. Jane, *Heresies of Seapower* (London: Longman, 1906).
 8. See Roger W. Barnett, "Maritime and Continental Strategies: An Important Question of Emphasis," in *Seapower and Strategy*, ed. Colin S. Gray and Roger W. Barnett (Annapolis, MD: Naval Institute Press, 1989), p. 355, and Michael Evans, *The Continental School of Strategy: The Past, Present and Future of Land Power*, Study Paper 305 (Duntroon, ACT: Land Warfare Studies Centre, 2004), available at researchcentre.army.gov.au/.
 9. Paul Kennedy put it succinctly: "[N]othing ever occurred in the maritime realm to equal the devastation of, say, the Thirty Years War on land." Paul Kennedy, "The Influence and the Limitations of Sea Power," *International History Review* 10, no. 1 (February 1988), p. 8.
 10. Julian Corbett, *Some Principles of Maritime Strategy* (London: Longman, 1918), p. 12.
 11. James Cable, *Gunboat Diplomacy, 1919–1991*, 3rd ed. (London: Macmillan, 1994), p. 37.
 12. John Pryor, "A Medieval Maritime Revolution: Crusading by Sea 1096–1204" (lecture, Univ. of British Columbia, Vancouver, BC, March 2010), cited in Richard Unger, "Commerce, Communication, and Empire: Economy, Technology and Cultural Encounters," *Speculum* 90, no. 1 (January 2015), p. 15.
 13. Harold Sprout and Margaret Sprout, introduction to 1966 edition to *The Rise of American Naval Power, 1776–1918*, 2nd ed. (Princeton, NJ: Princeton Univ. Press, 1939; repr. 1967), p. ix.
 14. The classic statement of this trend is Paul Kennedy, *The Rise and Fall of British Naval Mastery* (Amherst, NY: Humanity Books, 1998), pp. 196–99.
 15. Edward N. Luttwak, *The Political Uses of Sea Power* (Baltimore: Johns Hopkins Univ. Press, 1974).
 16. Ken Booth, *Navies and Foreign Policy* (New York: Crane, Russak, 1977). For the uses of navies in peacetime, see John B. Hattendorf, "Recent Thinking on the Theory of Naval Strategy," in *Maritime Strategy and the Balance of Power*, ed. John B. Hattendorf and Robert S. Jordan (New York: St. Martin's, 1989), pp. 149–52. Also see Kevin Rowlands [Cdr., RN], "'Decided Preponderance at Sea': Naval Diplomacy in Strategic Thought," *Naval War College Review* 65, no. 4 (Autumn 2012), pp. 89–105.
 17. On the limitations of airpower, see Robert A. Pape, *Bombing to Win* (Ithaca, NY: Cornell Univ. Press, 1996), and Mark Clodfelter, *The Limits of Air Power: The American Bombing*

of North Vietnam (Lincoln: Univ. of Nebraska Press, 2006).

18. In fact, both Edward Luttwak and Gerald Graham argue that an a priori recognition of naval and, above all, national primacy is a necessary condition for the symbolic use of naval power to have a political effect. The show of naval force is linked not just to the particular capabilities, which may be impressive, but to the resolve, strength, and reputation of the nation wielding it. Hence, what matters is less the actual capability of a particular vessel appearing off the coast of the rival but what flag it flies. Some sea powers can constrain the action of others through a “shadow” (Luttwak’s word) rather than through a constant physical presence. See Luttwak, *The Political Uses of Sea Power*, and Gerald S. Graham, *The Politics of Naval Supremacy: Studies in British Maritime Ascendancy* (Cambridge, U.K.: Cambridge Univ. Press, 1965; repr. 2008).
19. See also Gray, *The Leverage of Sea Power*, pp. 31–55.
20. For the necessity for, yet the difficulty of, conducting land operations to secure a naval base, see Charles E. Callwell, *Military Operations and Maritime Preponderance: Their Relations and Interdependence* (London: William Blackwood, 1905), pp. 110–25.
21. The British Empire also faced this challenge, as it may have spread its resources too thin across its vast imperial frontier while limiting its commitment to the European continent. As a result, in the early twentieth century it left its most immediate threat, Germany, unchecked until it was too late to deter it effectively. See Michael Howard, *The Continental Commitment: The Dilemma of British Defence Policy in the Era of the Two World Wars* (London: Maurice Temple Smith, 1972), and G. C. Peden, “The Burden of Imperial Defence and the Continental Commitment Reconsidered,” *Historical Journal* 27, no. 2 (June 1984), pp. 405–23.
22. Hamilton, “Naval Power and Diplomacy in the Nineteenth Century,” p. 80.
23. An analogous challenge presents itself when a sea power faces a naval rival: often winning a naval battle is not sufficient to achieve dominance over the sea, and certainly not to defeat the rival comprehensively. The Venetian and Spanish victory at Lepanto in 1571 over the Ottoman navy was a historic achievement, but it did not eliminate the Turkish presence in the eastern Mediterranean; it did even less to arrest the Turks’ expansion in Europe (which finally was checked a century later at the Siege of Vienna). As the grand vizier Mehmed Sokollu put it to a Venetian diplomat, “by taking Cyprus we have cut off your arm; by defeating our fleet, you have merely shaved our beard. An arm, once severed, never grows back, but the beard, after it is shaved, comes back stronger than before.” Alvise Zorzi, *La repubblica del leone* (Milan, It.: Bompiani, 2001), p. 358. See also Andrew Hess, “The Battle of Lepanto and Its Place in Mediterranean History,” *Past & Present*, no. 57 (November 1972), pp. 53–73, and William McNeill, *Venice: The Hinge of Europe* (Chicago: Univ. of Chicago Press, 1974), pp. 123–54.
24. The opposite—namely, using naval power to redirect the attention of a land rival away from its continental efforts—rarely works. The British, for example, tried to divert French forces from the Spanish Netherlands in the 1690s by bombarding French ports (Calais, Saint-Malo, Dunkirk) and by amphibious attacks (Saint-Malo, Brest) but had no success. See Jeremy Black and Cheryl Fury, “The Development of Sea Power, 1649–1815,” in *The Social History of English Seamen, 1650–1815*, ed. Cheryl Fury (Suffolk, U.K.: Boydell & Brewer, 2017), p. 6.
25. Cited in Jon T. Sumida, *Inventing Grand Strategy and Teaching Command: The Classic Works of Alfred Thayer Mahan Reconsidered* (Baltimore: Johns Hopkins Univ. Press, 1997), p. 81.
26. Graham, *The Politics of Naval Supremacy*, p. 72.
27. Vojtech Mastny, “Stalin and the Prospects of a Separate Peace in World War II,” *American Historical Review* 77, no. 5 (December 1972), pp. 1365–88.
28. Kevin D. McCranie, *Mahan, Corbett, and the Foundations of Naval Strategic Thought* (Annapolis, MD: Naval Institute Press, 2021), p. 26.
29. Kevin Rowlands, “Riverine Warfare,” *Naval War College Review* 71, no. 1 (Winter 2018), pp. 53–69.

30. Alfred Thayer Mahan [Cdr., USN], *The Gulf and Inland Waters*, vol. 3 of *The Navy in the Civil War* (New York: Scribner's, 1883).
31. Jakub J. Grygiel, "The Dilemmas of US Maritime Supremacy in the Early Cold War," *Journal of Strategic Studies* 28, no. 2 (April 2005), pp. 202–204.
32. Theodore Ropp, "Continental Doctrines of Sea Power," in Earle, *Makers of Modern Strategy*, pp. 446–56; Callwell, *Military Operations and Maritime Preponderance*, p. 126.
33. On the maritime strategies of land powers, see also Gray, *The Leverage of Sea Power*, pp. 56–90.
34. "Je veux conquérir la mer par la puissance de terre." Albert Sorel, *L'Europe et la Révolution française* (Paris: Plon-Nourrit, 1904), vol. 7, p. 115.
35. J. H. Thiel, *Studies on the History of Roman Sea-Power in Republican Times* (Amsterdam: North-Holland Pub. Co., 1946). Clark Reynolds writes that the success of the Romans, "a non-maritime people capable of commanding the seas for nearly a millennium, must stand as a testimony of what a continental nation can do upon the seas, given simultaneously favorable historical variables of geography, organization, and disunited competitors." Clark Reynolds, *Command of the Sea: The History and Strategy of Maritime Empires* (New York: William Morrow, 1974), p. 77.
36. Colin Gray, "History for Strategists: British Seapower as a Relevant Past," in *Seapower: Theory and Practice*, ed. Geoffrey Till (Portland, OR: Frank Cass, 1994), p. 17.
37. The British Empire, for example, had a hard time helping its ally Sweden in 1808–1809 when the latter was under Russian attack, because, in part, it could not control the Baltic Sea. The flip side of this situation was when a weak power such as the declining Austro-Hungarian Empire could control the Adriatic Sea throughout World War I, until the armistice, despite being thoroughly defeated on land—exactly because a small, semiencllosed sea diminishes the advantages that a powerful maritime state has in more-open seas. See James Davey, *The Transformation of British Naval Strategy: Seapower and Supply in Northern Europe, 1808–1812* (Suffolk, U.K.: Boydell, 2012), pp. 125–26, and Lawrence Sondhaus, "Austria-Hungary: An Inland Empire Looks to the Sea," in Rodger, *The Modern World*, pp. 180–90.
38. One immediate consequence of this was that powers in these semiencllosed seas ended up developing ships that were more defensible, capable of withstanding fast attacks from coastal artillery and from speedy boats hidden in bays. Theodore Ropp observed that the Mediterranean was "more suited to the lightning clashes of special task forces than to the methodical maneuvers of entire fleets." Consequently, regional powers such as Italy and France in the early twentieth century developed "shore based aircraft, heavily gunned cruisers, and heavy battleships. The carrier and the big flying boat were both unnecessary and the capital ship for such conditions needed to be as nearly unsinkable as possible." The absence of long-distance maneuvers meant short, sharp, and close-quarter fights, requiring a different technological solution. Ropp, "Continental Doctrines of Sea Power," p. 455.
39. Alfred Thayer Mahan, *The Influence of Sea Power upon History, 1660–1783* (Boston: Little, Brown, 1898), p. 16.
40. This weakness of the sea power facing a land power also was evident during the Napoleonic Wars. Napoléon had to be defeated on land, by armies, and while the naval might of Great Britain could prevent a French expansion outside continental Europe, it could not arrest the movement of the Napoleonic forces on land. The role of the navy therefore was merely defensive, and the British Empire needed an army, preferably small, for offensive purposes, such as the defeat of a land rival. As a historian puts it, "despite the famous dictum of Admiral Mahan, it was not 'those far-distant, storm-beaten ships, upon which the Grand Army never looked' that defeated Napoleon, simply because the Grand Army never looked upon them." J. F. Lazenby, "Naval Warfare in the Ancient World: Myths and Realities," *International History Review* 9, no. 3 (August 1987), p. 441. Also see Robert Massie, *Dreadnought: Britain, Germany, and the Coming of the Great War* (New York: Random House, 1991), p. 626.
41. This limitation is related, of course, to the features that characterize a navy. Ken Booth lists the following seven: versatility, controllability, mobility, projection ability, access

potential, symbolism, and endurance. The last one, endurance, may appear to contradict the point I make here—namely, that sea powers have a credibility problem owing to their great flexibility. But Booth refers to the ability of a few ships to stay put in a particular location for weeks and months, not to the enduring ties that a maritime power may develop to a distant location. Navies, by their very nature, can move away with great ease, even if they have the endurance to stay at sea. Booth, *Navies and Foreign Policy*, pp. 33–35.

42. In his elegy on sea power, Bacon added that the “vantage of strength at sea (which is one of the principal dowries of this kingdom of Great Britain) is great . . . because most of the kingdoms of Europe are not merely inland, but girt with the sea most part of their compass.” Francis Bacon, *The Works of Francis Bacon* (Philadelphia: Carey and Hart, 1842), vol. 1, p. 39.
43. An ancillary consequence is that sea powers often generate a mentality of insouciance regarding or disinterest in the affairs of the land. Joseph Conrad described it best: “In the immutability of their surroundings the foreign shores, the foreign faces, the changing immensity of life, glide past, veiled not by a sense of mystery but by a slightly disdainful ignorance; for there is nothing mysterious to a seaman unless it be the sea itself, which is the mistress of his existence and as inscrutable as Destiny. For the rest, after his hours of work, a casual stroll or a casual spree on shore suffices to unfold for him the secret of a whole continent, and generally he finds the secret not worth knowing.” Joseph Conrad, *The Heart of Darkness*, in *Youth and Two Other Stories* (New York: Doubleday, Page, 1924), p. 48.
44. “A sea power conquers a large space by leaping lightly from point to point, adjusting itself to existing political relationships wherever possible, and often not establishing its legal control until its factual domination has long been tacitly recognized. An expanding land power moves slowly and methodically forward, forced by the nature of its terrain to establish its control step by step and so preserve the mobility of its forces. Thus, a land power thinks in terms of continuous surfaces surrounding a central point of control, while a sea power thinks in terms of points and connecting lines dominating an immense territory.” Nicholas J. Spykman, “Geography and Foreign Policy, II,” *American Political Science Review* 32, no. 2 (April 1938), p. 224.
45. Joseph C. Wylie Jr. [Rear Adm., USN], *Military Strategy: A General Theory of Power Control* (Westport, CT: Greenwood, 1967; repr. 1980), p. 49.
46. For the classic history of Venice and its constant trade-offs between the Italian mainland and its Mediterranean possessions, see Frederic Lane, *Venice: A Maritime Republic* (Baltimore: Johns Hopkins Univ. Press, 1973). On Venice’s *stato da mar*, see David Jacoby, “La Venezia d’Oltremare,” in *Storia di Venezia*, vol. 2, *Letà del Comune*, ed. Giorgio Cracco and Gherardo Ortalli (Rome: Istituto della Enciclopedia Italiana, 1995), pp. 263–99.
47. Jacques-Bénigne Bossuet, *Oeuvres complètes de Bossuet* (Besançon, Fr.: Outhenin-Chalandre Fils, 1840–41), vol. 5, p. 264.
48. See James Stokesbury, review of *Command of the Sea: The History and Strategy of Maritime Empires*, by Clark Reynolds, *Naval War College Review* 38, no. 2 (March–April 1985), p. 118.
49. On the necessity of a “joint” approach to sea and land power, see also Carnes Lord, “The Leverage of Sea Power,” *Comparative Strategy* 40, no. 2 (2021), pp. 194–97.
50. Conrad, *Heart of Darkness*, p. 62.

"TO DIE GALLANTLY"?

The Role of the Surface Fleet in German Naval Strategy, 1919–41

Peter Hooker

Germany's war at sea from 1939 to 1945 commonly is characterized as a submarine (U-boat) war with minor appearances by famous but ineffectual battleships. Indeed, Winston Churchill famously wrote that the only thing that "ever really frightened" him during the war was the U-boat menace, and scholarship on the Second World War at sea largely has reinforced the perception that the only meaningful threat the German navy posed during the war came from its submarines. While much has been written on the famous engagements between Germany's major capital ships—in particular *Admiral Graf Spee*, *Bismarck*, and *Scharnhorst*—and their British pursuers, these episodes tend to be treated as singular or as exceptional to the general conduct of the war at sea.¹ These surface battles are rarely placed in a strategic context. Admiral Erich Raeder, head of the German navy at the time, wrote at the outbreak of war with Britain and France that the German surface fleet could "do no more than show that they know how to die gallantly and thus are willing to create the foundations for later reconstruction."² He stated later, in his memoirs, that "[s]ooner or later our [surface] raiders would inevitably wear out, and their importance in the war picture wane. But I hoped that by that time our submarines would be strong enough to take their place against the enemy with even greater effect."³ Taken out of broader strategic context, both statements give the impression that Germany's surface fleet was inevitably doomed against the Allied navies and merely bought time for the U-boat's ascendancy.

While Germany's naval war from 1942 on was waged primarily by U-boats, its surface fleet played a far more significant strategic role in the first half of the war than is appreciated popularly. Furthermore, the construction of Germany's surface fleet was not the result of myopic

Peter Hooker is a recently submitted PhD candidate at the University of Newcastle, Australia.

Naval War College Review, Autumn 2021, Vol. 74, No. 4

or traditionalist naval officers desiring to revive the mighty Hochseeflotte (High Seas Fleet) of the First World War, as often is assumed. Rather, it was the result of considered appraisals of the German navy's performance in the First World War and the development of naval technology during the interwar period.

And despite his initial pessimism and postwar recollections, Admiral Raeder had not given up on the surface fleet's prospects against enemy shipping and naval concentration when war broke out in 1939. Until 1942, the German surface fleet managed to disperse British forces effectively and wage economic warfare against British shipping in conjunction with the U-boat campaign. Plans also were made—though never fully realized—to challenge British naval power directly by the deployment of the surface fleet, inflict a decisive blow against British shipping, and win the war at sea. It was only in 1941 and 1942, with the destruction of *Bismarck* and the relocation of German surface forces away from the Atlantic, that the war at sea between Britain and Germany shifted predominantly to a “U-boat war.”

LEARNING THE LESSONS OF THE FIRST WORLD WAR, 1918–30

It long has been believed that between the world wars German naval officers remained fixated on large surface ships and a somewhat caricatured version of Alfred Thayer Mahan's sea-power theories, convinced that a decisive engagement between large surface fleets was the only way to ensure control of the sea for the victor.⁴ Therefore, it often is argued, the German navy was unprepared for the Second World War because it failed to realize the full potential of U-boats.⁵ More recently, some historians have challenged the view that navies the world over were really so wedded to the presumption of the battleship's tactical primacy.⁶ Building on these recent analyses, an examination of the postwar reflections of German naval officers shows that planners had a far more nuanced, considered, and realistic appraisal of the First World War's U-boat campaign, which helps explain why Germany devoted such significant resources to constructing surface warships before the outbreak of the Second World War.

The recovery of the German navy after the First World War was a long and arduous process. The Treaty of Versailles permitted the Weimar Republic to maintain a Reichsmarine that was largely a coastal force, and it forbade U-boats until modified by the 1935 Anglo-German Naval Agreement. Although the German navy maintained a focus on continental defense throughout most of the interwar period, this did not mean that officers failed to reflect on the First World War at sea. Indeed, operational analyses were undertaken throughout the 1920s, often in the guise of historical studies, with the intention of reviewing the use of naval power in another global conflict.⁷ These studies provide key insights into the professional mind-set that would inform the development of the German surface fleet later, in the 1930s.

While historians have regarded the unrestricted U-boat warfare campaign of the First World War as heralding the ascendancy of U-boats (and later airpower) over battleships, to many German contemporaries this was not the reality. Indeed, even during the unrestricted U-boat campaign there was a growing realization that the U-boats could not deliver a decisive blow against Britain's vital shipping. In spite of a promising start, the U-boats were not able to stop shipping from reaching Britain, and their efforts to do so helped bring the United States into the war against Germany.⁸ Initial efforts during the First World War to hunt down and destroy the U-boats were ineffective because to that point there was no means of locating and destroying submerged U-boats. The situation changed in 1917 with the introduction of the convoy system, in which clustered merchant ships were protected by escort vessels equipped with a variety of antisubmarine-warfare (ASW) devices.⁹ Notably, interview data from captured German U-boat crews showed a recognition that U-boats alone could not bring victory to Germany.¹⁰

In an attempt to aid the U-boats' efforts, beginning in late 1917 the Imperial German Navy deployed its surface fleet to support the U-boats. Admiral Reinhard Scheer, who had been the commander in chief of the High Seas Fleet during the 1916 Battle of Jutland, recounted in his memoirs that by deploying the fleet to attack North Sea convoys, it was hoped that "[a]part from depriving the enemy of the supplies he awaited, it would place him under the necessity of affording better protection to the neutral shipping placed at his service, for which more warships would be required; these, again, would have to be taken from among those occupied in the war on U-boats."¹¹

The German fleet did place renewed strain on the Allies and presented the Germans with an opportunity to harass both components of British sea power, its military strength *and* resources, which U-boats had been unable to do on their own. Sir Henry Newbolt, a historian for Britain's Committee of Imperial Defence, writing during the interwar period, noted that the assignment of battle squadrons to protect convoys against enemy surface ships "was a great departure from the principle of rigid concentration which had dominated the organization and employment of the [British] Grand Fleet since the war began: it was illustrative of the extent to which the war against commerce had engaged our strength and resources."¹² By the end of the war, the High Seas Fleet had been able to show only meager results in support of the unrestricted U-boat-warfare campaign. Nonetheless, as noted, even during the war it became clear that U-boats were incapable of delivering a decisive blow to Britain on their own. Thus, reflecting on the conduct of the war at sea throughout the 1920s, key German officers emphasized that the potential represented by cooperation between U-boats and the surface fleet, while heretofore unrealized, was nonetheless real.

Rear Admiral Arno Spindler was charged with the construction and development of Germany's U-boats during the First World War. Later he headed the bureau studying ASW, established in 1925. In an essay written in 1926, he acknowledged that "[a]s long as submarines exist they will continue to be a threat to those nations which are unconditionally forced to rely upon overseas transportation." On the other hand, he recognized the effect the British surface warships had, especially their blockading of the North Sea, stressing that "the purely military employment of the submarines"—that is, the targeting of enemy warships rather than merchant ships—"was prematurely brought to a close."¹³ If the U-boats had been deployed more effectively against warships, he argued, they might have proved invaluable in breaking the blockade. In this vein, Captain Albert Gayer, a senior officer in the U-boat arm during the war, also noted several attempts at conducting operations with the surface fleet against enemy warships (in one such foray, in August 1917, the British lost two cruisers to U-boats deployed in ambush) and also drew attention to unrealized plans for asymmetrical warfare conducted by air, surface, and U-boat units.¹⁴

With regard to using U-boats as commerce raiders, Spindler, Gayer, and others argued that U-boats needed to be made larger to increase their operational range and better armed for engaging convoy escorts, even on the surface.¹⁵ Gayer assessed the potential of these large vessels, known as U-cruisers, late in the war as follows: "The British regarded with great anxiety these new developments in submarine warfare, and the greater possibilities which existed as a result of this expansion of submarine warfare. That these operations would extend far beyond the field of the British counter-measures was better understood in England than in Germany; hence their characterization that the Germans had given up their weapons 'five minutes' too soon."¹⁶ In apparent validation of Gayer's ideas, former German submariners were working on the other side of the world to help the Imperial Japanese Navy design a submarine fleet that ended up closely resembling the U-cruiser concept.¹⁷

Wolfgang Wegener, a flag officer during the interwar period, was arguably one of the most influential personalities within the Reichsmarine.¹⁸ In his main work, *The Naval Strategy of the World War*, published in 1927, he characterized the effectiveness of the unrestricted U-boat campaign and the British blockade of Germany as being akin (to use a modern term) to mutually assured destruction: "[W]e starved in jail and almost succeeded in making our jailer starve with us."¹⁹ In other words, while U-boats were able to attack Britain's vital maritime shipping, the blockade imposed by the Royal Navy effectively left Germany unable to access its own vital shipping. He concludes that, "[a]s valuable as the submarine campaign may have been, it gained only partial command of the sea. The submarine can destroy sea lanes but cannot protect them. Submarines can dive under a

blockade but cannot break it.”²⁰ Overcoming those obstacles still would require a powerful surface fleet.

Finally, the development of asdic (a primitive sonar named after the Anti-Submarine Detection Investigation Committee) also reinforced during the interwar period the view that ASW outmatched the capability of U-boats. By sending out pulses that would rebound off a submerged U-boat’s hull, asdic could provide its approximate location. The device was developed but not used operationally during the First World War. Historical examination suggests that while the Royal Navy placed undue faith in and reliance on asdic during the interwar period, it did so to dissuade potential rivals from developing U-boats.²¹ Karl Dönitz, Raeder’s successor and the head of the U-boat arm during the Second World War, later boasted in his memoirs, “I did not consider that the efficient working of ASDIC had been proved, and in any case I had no intention of allowing myself to be intimidated by British disclosures.”²² Yet, according to Peter Padfield, “uncertainty about the range and effectiveness of ASDIC influenced U-boat Commanders right up to the outbreak of war,” and Dönitz as well.²³ Thus, right up to the very eve of the Second World War, even the head of the U-boat arm did not believe that U-boats offered a viable alternative to a surface fleet.

Although focusing on U-boat performance during the First World War, these studies help to explain the later development of the German surface fleet. The use of U-boats as a war-winning weapon in the First World War ultimately was considered a failure. The limitations on the U-boat’s armament and operational range meant that Germany was unable to challenge the British blockade effectively or operate in distant theaters. The implementation of the convoy system and the development of ASW devices, and later asdic, also appeared to undermine the wartime potential of U-boats. Given these limitations and the restrictions imposed by the Treaty of Versailles, it was a reasonable belief that a surface fleet would continue to be the decisive factor in the employment of naval power in any future conflict.

This did not mean that U-boats were neglected completely. Rather, it appeared that U-boats could not be relied on as a stand-alone decisive weapon and did not offer a realistic alternative for the revival of the German navy in the interwar period until nearly the outbreak of the Second World War, as will be discussed. Instead, several German officers speculated on how U-boats and surface forces could be of mutually beneficial use.

For Erich Raeder, the future head of the German navy, the First World War also suggested that the surface fleet would continue to be decisive in any future global war. Raeder spent part of his interwar career posted to the archives, working on a dissertation focused on cruiser warfare for the official history of the German war at sea. Although he is characterized as a staunch traditionalist of the

“Mahan school,” one who sought decisive battle to achieve maritime hegemony, his work during this period suggests otherwise.²⁴ Keith Bird, Raeder’s biographer, argues that in his analysis of Vice Admiral Maximilian von Spee’s Far East Asian Cruiser Squadron, “Raeder noted the disruption and dislocation of troop movements and Allied shipping caused by the threat posed by Spee’s ships, as well as the large number of warships diverted to search for his squadron and the lone raiders such as the *Emden* and *Karlsruhe*.”²⁵ Indeed, rather than dismissing the impact of Spee’s squadron as a distraction from a decisive battle with the British in the North Sea, Raeder instead noted that “this Squadron affected conditions at almost every British Station, and materially altered the strengths in the main theater of the war, no fewer than three battlecruisers being withdrawn from the North Sea at the same time; this weakening of the Grand Fleet should have had a definite influence on the attitude of the German Naval Staff and the Higher Command.”²⁶

Raeder’s interest in cruiser warfare and using surface warships to disperse an opponent’s naval force possibly dates from 1914, when Vice Admiral Franz Hipper, whom Raeder served as chief of staff, proposed to use fast battle cruisers to break out into the Atlantic to conduct such operations, hoping to disperse the British Grand Fleet that was tasked with bottling up the High Seas Fleet in the North Sea.²⁷

Raeder found validation for his evaluation of Spee’s squadron from French naval theorist Admiral Raoul Castex. Castex posited that a favorable situation for a weaker naval power could be created by strategic maneuver to force a dispersal of superior enemy forces, and notably he used Spee’s squadron as an unrealized example.²⁸ The influence of Castex on Raeder has received almost no historical attention, although it challenges the assumption that Raeder’s understanding of sea power was fundamentally, if simplistically, Mahanian.²⁹ Years later, during the lead-up to the Second World War, the potential value of undermining superior sea power by dispersing one’s own naval forces and attacking the opponent’s shipping was Raeder’s guiding strategic principle.

REARMING: THE EVOLUTION AND CONSTRUCTION OF THE GERMAN NAVY, 1930–39

Throughout the 1930s, the German navy underwent a process of rearmament that saw the capital ship retain its supremacy as the main arbiter of naval power. This was not because of a manic fixation on big ships; rather, it was because capital ships offered the most-effective means of exercising naval power, owing to improvements in their operational range, armaments, propulsion, and armor. In contrast, the performance of U-boats barely had improved since 1918; they continued to suffer from poor visibility on the surface, leaving them vulnerable

to surprise attack, and near immobility when submerged. As a platform they had restricted armament, while speed remained generally constrained. Still, several innovations would elevate the importance of the U-boat within the fleet.³⁰

Under the Treaty of Versailles, the six obsolete battleships permitted to the Reichsmarine could be replaced in the 1930s, although the new ships were not to exceed ten thousand tons. As a result, the new ships sacrificed the heavy armament and protection of a standard battleship for the high speed of a cruiser, leading to a hybrid capital ship termed a *Panzerschiff* (armored ship), colloquially known as a pocket battleship. The first to be laid down, *Deutschland*, possessed a limited main armament of six eleven-inch guns, accompanied by a secondary armament of eight six-inch guns and eight torpedo tubes. This comparatively paltry armament was compensated for with a maximum speed of twenty-eight knots, unmatched by any battleship of the time.³¹ Another novel feature was its diesel engines, which provided an astounding ten-thousand-nautical-mile range at twenty knots without needing to refuel—alleviating what had been a major handicap of the High Seas Fleet.³² These capabilities led German strategists to theorize that the *Panzerschiff* could prey almost at will on enemy shipping by outrunning more-powerful opponents and outgunning weaker ones.³³

Germany's naval rearmament plan seemingly was vindicated in June 1935 with the signing of the Anglo-German Naval Agreement. The potential threat that *Deutschland* posed had spurred Britain to conclude the agreement to cap Germany's naval revival and reduce the pace of rearmament in Europe.³⁴ It permitted Germany a 35 percent parity to the Royal Navy in surface ship tonnage and 45 percent in U-boat tonnage—beyond the Versailles restrictions.³⁵ However, thereafter Adolf Hitler pursued a continentally focused rearmament policy, and only another two *Panzerschiffe*, *Admiral Scheer* and *Admiral Graf Spee*, were completed.

Secret preparations also had been under way to revive the U-boat arm via foreign firms, German dummy companies, and preassembly that circumvented the Versailles restrictions, although actual production was not begun until the Anglo-German Naval Agreement was signed. From 1935 to 1939 the Kriegsmarine (renamed from Reichsmarine in 1935) built fifty-seven U-boats, mainly of three distinct classes. The Type IIA was the first of a series (A through D) of small coastal boats displacing a mere 254 tons and completed just weeks after the 1935 agreement.³⁶ These were intended as intermediate designs to provide data to inform future U-boat construction and to operate in the North and Baltic Seas against potential threats posed by France, Russia, and Poland. A larger vessel, the Type I, displaced 862 tons and had a greater range and armament. This type proved to be overly cumbersome, so only two (*U-25* and *U-26*) were completed, compared with the fifty Type IIs commissioned between 1935 and 1940.³⁷

The primary purpose of the two follow-on U-boat classes, the Type VII and Type IX, was to conduct longer-range operations in the Atlantic. The first of the Type VII series (A through F) displaced 626 tons when completed in 1936 and had a range of 6,200 nautical miles at ten knots on the surface. The Type IX was the largest of the new U-boats, displacing 1,032 tons and accommodating an increased armament capacity of six torpedo tubes (four bow, two stern) and a 10,500-nautical-mile range at ten knots. Its initial role was somewhat ambiguous, as the naval high command favored its use in direct cooperation with the surface fleet, while Dönitz and his supporters advocated that it be used as a distant commerce raider.³⁸ Production was paused until a decision was reached—one that favored Dönitz's conception—and consequently the first Type IX was not commissioned until 1938.³⁹ Despite some setbacks, of 1,158 U-boats constructed from 1935 to 1945, approximately nine hundred were Type VIIs and IXs.⁴⁰

It was the ominous emergence of *Deutschland*, however, that was of primary concern to other European navies. Indeed, an arms race ensued from 1935 to 1939 that led to the evolution of the fast battleship. The fast battleship type emphasized speed on a platform that had been designed to optimize firepower and protection. The first to counter *Deutschland* was the French *Dunkerque*, launched in 1935, which achieved 29.5 knots. The Italians, in turn, responded in 1937 with the thirty-knot *Vittorio Veneto* class. The Germans countered with the *Scharnhorst* class, comprising its namesake and *Gneisenau*, which had been intended as *Panzer-schiffe* until the original keels were scrapped in 1934 and redesigned.⁴¹ The new hulls, laid down in 1935 and eventually displacing around 34,841 tons, carried a heavier nine-gun main battery and better armor protection. The new class was intended to counter *Dunkerque*, although political considerations limited its armament to eleven-inch guns so as not to antagonize Britain. Experimental high-pressure steam turbines that promised a maximum speed of around thirty knots but at a cost in range and endurance were incorporated instead of diesel engines like *Deutschland's*, and they proved much more challenging to maintain.⁴² In 1936, Germany laid down its first true fast battleships, the 41,700-ton *Bismarck* class (*Bismarck* and *Tirpitz*), equipped with eight fifteen-inch guns, capable of reaching twenty-nine knots, and with an 8,500-nautical-mile operational range at nineteen knots—representing significant reductions compared with *Panzer-schiff* characteristics.⁴³ The British Admiralty responded with its own fast battleships, the *King George V* class, in 1939.

In the meantime, Raeder was refining his views on German naval strategy. In February 1937, he outlined his ideas for rearmament and his principles of naval strategy to Hitler and other senior figures of the Reich. These “reflected a clear formulation of his naval strategy and the culmination of his own strategic studies and experiences and the themes that had dominated the debate over naval

strategy since the end of World War I.”⁴⁴ Seeing the Atlantic Ocean as the pivotal theater of naval operations for conducting war on an enemy’s economy, Raeder declared that the objective of the German navy must be the defense of German shipping lanes and the relentless “interdiction of those of our enemy.”⁴⁵ A determined offensive against enemy shipping would undermine the economic ability of opponents to wage war, while simultaneously forcing them to defend their own sea-lanes rather than target German shipping. Tellingly, Raeder also argued that new technology, such as submarines and airpower, had not supplanted capital ships as decisive units in naval warfare, but rather had augmented their operational possibilities at sea.⁴⁶

In 1938, Hitler declared Britain to be a potential adversary. That same year, a strategic study recently produced by the Oberkommando der Marine (German naval command) concluded that only by cruiser warfare conducted by surface ships (especially the *Panzerschiffe*), with the cooperation of U-boats, could Germany hope to exercise effective naval power. No consensus, however, could be reached on the exact role that capital ships were to play in cruiser warfare waged in the Atlantic.⁴⁷ Although Raeder continued to support a strategy of cruiser warfare conducted by the *Panzerschiffe*, his views came into increasing conflict with Hitler’s, who hoped to use the revived German surface fleet as an instrument of global power politics against British naval power, more so than its commerce.⁴⁸ This tension undermined the establishment of a clear direction for the Kriegsmarine up to and during the Second World War.

Nonetheless, plans were put in effect for the construction of a German fleet, known as Plan Z. Although it remained unrealized, thus ultimately more of a wish list of warships than a coherent plan, it offers insight into the Kriegsmarine’s strategic priorities just before the outbreak of war. Rather than rely on a single vessel type, and perhaps hoping to reach a consensus, Raeder instead pushed for a balanced fleet comprising sixteen capital ships, four aircraft carriers, 249 U-boats, and several light vessels, to be complete by 1947. Of the 249 U-boats listed in the plan, sixty were coastal U-boats, 162 the Atlantic types, and twenty-seven large types. But the nucleus of the Plan Z fleet was a new generation of *Panzerschiffe* and fast battleships (never completed) that would have optimized range and speed.⁴⁹

Although Plan Z concentrated on the construction of new capital ships, the German naval high command did have plans for a robust U-boat arm that included large fleet U-boats and U-cruisers that could operate both with the surface fleet and independently in distant waters. Only one, the Type XB minelayer, was ever completed. The Type XII, which resembled the Type IX in shape and armament but displaced some two thousand tons and was capable of making twenty knots, finally would have provided the German navy with a submarine capable of operating directly with its surface ships. Echoing Gayer’s assessment in 1926, Raeder

outlined specifications for a U-cruiser in a letter dated March 1937. “Tasks: offensive operations against merchantmen in distant waters. The U-cruiser has to be able to take over the role of a surface ship and have the firepower of an auxiliary cruiser or escort ship, when protecting or attacking merchantmen.”⁵⁰ The Type XI U-cruiser would have had an enormous displacement of 3,140 tons. Its main armament, aside from eight torpedo tubes, was to be four five-inch guns in two twin turrets and four antiaircraft guns. It also was designed to carry a seaplane for reconnaissance. Although these designs appear somewhat fantastical, they indicate that the German naval command had high hopes and ambitions for its U-boat arm.

By 1939, the construction of the Plan Z fleet was under way. The battle instructions for the Kriegsmarine, issued in May 1939, reemphasized the need to concentrate operations against enemy shipping rather than against naval forces, in the event of war with Britain and France. The aim of naval warfare, it stated, was to “cripple England’s and France’s military and economic imports by water.” This, the instructions declared, could be successfully undertaken “only on the oceans”—that is, beyond the North Sea.⁵¹ The instructions went on to state that war on enemy shipping “is directed equally against the cargoes and shipping space of the enemy. Combat action even against inferior enemy naval forces is not an aim in itself and is therefore not to be sought.”⁵² While the U-boats concentrated on enemy shipping around the coast, the Luftwaffe (German air force) was to mine and destroy transport facilities in enemy ports by air. As many surface ships as possible would operate throughout the Atlantic and farther abroad, supported by a network of supply ships, many operating out of neutral ports—a system that had its origins in the First World War.⁵³ Finally, to aid the war on enemy shipping, German naval forces were to disrupt the expected British blockade of the North Sea through small operations, with the further aim of “keeping as many of the enemy forces as possible continuously tied up” in the North Sea.⁵⁴ Thus, the primary purpose of the German surface fleet in the event of war with Britain and France was to make a relentless attack on enemy sea-lanes, with the intention of destroying and disrupting enemy shipping and dispersing enemy naval forces.

The plan’s strategic concept went beyond cruiser warfare and had origins in the First World War, when the High Seas Fleet was deployed to degrade British maritime power in both its economic and military dimensions, and was reminiscent of Castex’s theory.⁵⁵ Only in September 1939 did Dönitz advocate a strategic alternative, in a memorandum outlining a construction program for three hundred U-boats and various light surface craft.⁵⁶ Concerned more about the merchant vessels themselves than their cargo, he hoped to wage a tonnage war, with the intention of sinking ships faster than new ones could be built to replace them. The famous wolf-pack tactic would be used to overwhelm merchant convoys, coordinated by radio communication either from shore or from a Type IX U-boat

serving as a command-and-control hub for the “pack.” Given the later conduct of the war, Dönitz’s alternative appears reasonable. However, his proposal came on the eve of the war and in the context of impressive technological improvements to surface warships. Until this point, therefore, the U-boats did not offer a feasible alternative to Germany’s hybrid cruiser-warfare concept.

Indeed, the evolution of Germany’s naval strategy clearly was linked with the technological innovations of the 1930s. The capital ship remained the primary instrument of sea power because of the comparative primitiveness of submarines and aircraft. *Deutschland* appeared to be an epochal warship that made feasible a nascent conception of cruiser warfare using powerful surface warships operating at distant ranges. The lessons of the First World War were refined and adapted in response to the emergence and progress of technology and the anticipation of enemy fleets and plans. Despite its focus on capital ships, the Plan Z fleet reflected an evolution in German naval thought beyond the “decisive battle” strategy that had dominated the Imperial German Navy. When war did break out in September 1939, however, the Kriegsmarine possessed an incomplete naval force that was smaller than the High Seas Fleet, with most of its units not intended for operations against the Royal Navy. Although ultimately unsuccessful, these concepts significantly determined the course of the war from 1939 to 1941.

THE HEYDAY OF THE GERMAN SURFACE FLEET: 1939–41

With Plan Z well out of reach, construction of heavy warships ceased in September 1939, exempting those nearing completion, and a new program dedicated to producing the Type VII and Type IX U-boats was implemented. However, the number of U-boats available was limited and the strategic prospects of the German navy at the outbreak of war in 1939 were negligible. Yet by June 1940, Germany’s geostrategic position had improved owing to the seizure of Norway (an achievement greatly aided by the surface fleet) and France. The French coastal ports were especially crucial because they allowed direct access to the Atlantic, while Norway secured the North Sea, thus undermining the effectiveness of the British blockade.⁵⁷ Raeder’s initial pessimism that his forces could do nothing more than show how to “die gallantly” was replaced by an enthusiasm to operate the surface fleet and U-boat arm together against Britain’s shipping, aided by auxiliary cruisers.

U-boats were deployed at focal points for trade around Britain—the most likely places they might encounter merchant ships. Their numbers were insufficient, however, to threaten Britain’s maritime shipping decisively; Germany would not have more than a hundred U-boats until April 1941.⁵⁸ Lack of numbers also meant that most attacks were conducted against independent vessels by individual U-boats. It was not until September 1940 that Dönitz successfully used the

wolf-pack tactic against a convoy, sinking eleven of fifteen merchant ships.⁵⁹ Despite sinking 2,186,158 tons of merchant shipping in 1940, this translated to overall convoy losses that year of just 1.63 percent—insufficient to be decisive. Thus, to supplement the U-boat campaign, surface ships once again were deployed to wage cruiser warfare. The Reichsmarine believed this would force the Royal Navy to disperse its forces, would disrupt enemy naval operations, and would prevent a concentration against the U-boats.⁶⁰ Germany's commerce raiders were ordered not to engage equal or superior enemy ships.

The heyday of surface operations lasted from 1940 until 1941, during which time the conduct of the surface fleet, in conjunction with the U-boats, caused disproportionate havoc to Britain's shipping and prevented the Royal Navy from concentrating its forces fully.⁶¹ In October 1940, *Admiral Scheer* became the first German capital ship to break out into the Atlantic since the war began.⁶² Showcasing both the qualities of the class and the efficiency of the supply-ship system in a voyage that stretched as far as the Indian Ocean, *Scheer* sank 99,059 tons of merchant shipping before returning to Germany in March 1941. An attack on Convoy HX84 in the North Atlantic resulted in the sinking of five ships totaling 38,720 tons, along with the escorting armed merchant cruiser *Jervis Bay*. Although a relatively minor achievement, the attack caused the next two HX convoys to be recalled to port and held up further convoys for twelve days. The heavy cruiser *Admiral Hipper* made a follow-on sortie in November. It achieved meager results but was the first heavy German warship to put in successfully to the French port of Brest, in December 1940, where it posed a more immediate threat to Atlantic shipping.⁶³ Meanwhile, disguised auxiliary cruisers were deployed into the Atlantic, the Indian Ocean, and the Pacific. In July, one auxiliary cruiser, *Widder*, forced the British Admiralty to stop independent shipping and divert convoys away from the West Indies, while another, *Atlantis*, would sink a record 145,687 tons before meeting its end in November 1941 against HMS *Devonshire*.⁶⁴

Although it may appear that the surface fleet was merely being used as a stop-gap until more U-boats were made available, the operations of the surface fleet played a far more significant strategic role in the first half of the war at sea than often is acknowledged. These operations not only disrupted Britain's shipping; they also often forced Britain to disperse its naval power across the globe. Three Royal Navy task forces, including four cruisers and two aircraft carriers, were dispatched to find *Scheer*. A sighting by HMS *Glasgow* brought an additional carrier and four cruisers into the hunt.⁶⁵ Through the continuous deployment of powerful surface warships, Raeder also hoped to affect the overall strategic situation. He calculated that this threat to their merchant shipping would force the British to split their forces even further between the Atlantic and the Mediterranean.⁶⁶ On 25 December 1940, *Hipper* intercepted a convoy carrying forty thousand

troops to the Middle East, but was driven off after a brief engagement with British escorts. This encounter nonetheless had significant consequences; the Admiralty rushed to assign heavy warships to convoy escort.⁶⁷ Although fewer ASW vessels were diverted than Germany's naval high command expected, the commitment of British heavy escorts demonstrates the Admiralty's level of anxiety and validates the threat Raeder's surface fleet posed. The surface fleet, therefore, did not operate as a mere transitional force in anticipation of a larger U-boat fleet.

Four heavy German warships were active from January until March 1941, a period that marked the first successful complex, anticommerce naval operation in the Atlantic theater. Operation BERLIN was the largest and the most successful Atlantic operation conducted by the German surface fleet during the war. It began in January 1941, when *Scharnhorst* and *Gneisenau*, under the command of Vice Admiral Günther Lütjens, ventured into the Atlantic and, aided by nine supply ships, sank or captured 116,610 tons of shipping over sixty days. Distant cooperation among *Scharnhorst*, *Gneisenau*, and U-boats led to the tracking and interception of Convoy SL67 on 7–8 March, which resulted in five ships being sunk by the U-boats. Before steering for France, Lütjens intercepted several more merchant ships that had been dispersed from a convoy because of an attack by U-boats.⁶⁸ On 9–11 February, during *Hipper*'s second sortie, *U-37*, FW-600 aircraft, and *Hipper* carried out the first successful asymmetrical attack against Convoy HG30.⁶⁹ The next day, this also led to *Hipper*'s greatest success: sinking seven of nineteen unescorted ships from Convoy SLS64.⁷⁰

Dispersed as it was, the Royal Navy could not deal effectively with the multifaceted threat posed by Germany's surface fleet, U-boats, and auxiliary cruisers. As Stephen Roskill notes, Britain lost significant merchant shipping during this period. The German surface ships, "for a time, completely dislocated our Atlantic convoy circles, with serious consequences to our vital imports. Their [*Scharnhorst* and *Gneisenau*'s] depredations forced the wide dispersal of our already strained naval resources, and successfully diverted attention from the returning *Scheer* and *Hipper*; while, by their subsequent arrival in a Biscay port, they became an imminent threat to all our Atlantic shipping."⁷¹ Despite the best efforts of Admiral John Tovey, commander in chief of the Home Fleet, all four warships reached port safely: *Scheer* and *Hipper* to Germany, and *Scharnhorst* and *Gneisenau* to Brest in France.

The pressure that these forays exerted was especially important because in February the number of active U-boats was at its lowest level of the entire war. Furthermore, the U-boats now were confronted with improved radar, escorts, and ASW tactics, forcing Dönitz to redeploy his units farther west and away from convoy congestion zones.⁷² Still, total tonnage sunk from January until March amounted to 1,253,339 tons. The U-boats sank the largest portion of these losses, accounting for 566,585 tons, but the surface fleet and auxiliary cruisers

contributed nearly a quarter of the overall total, with 301,885 tons. The surface raiders therefore made an invaluable contribution to Germany's attempt to consummate a blockade of Britain, by dispersing British naval strength, disrupting military convoys, and sinking the shipping tonnage they did.

So far, the deployment of the surface fleet had aided the German war effort dramatically, despite its inferior size and strength relative to the Royal Navy. For the first time in history, German battleships were operating in the Atlantic against British shipping with near impunity. Only when they reached port in France were the ships seemingly vulnerable, to heavy air raids.⁷³ Additionally, the German surface fleet soon reached its zenith with the commissioning of the battleships *Bismarck* and *Tirpitz* and the heavy cruiser *Prinz Eugen*. Anticipating further success, in April 1941 Raeder outlined plans for a new operation, code-named RHINE EXERCISE. In a manner reminiscent of Germany's prewar planning and Castex's theories, the new warships, along with *Scharnhorst* and *Gneisenau*, now would be free to engage their dispersed enemy counterparts. This, it was expected, would change further the balance of naval power, creating favorable circumstances to achieve victory in the war at sea. Reflecting his faith in the operation, Raeder even gave orders that U.S. naval forces could be engaged as well.⁷⁴

However, Raeder's original cohort of four capital ships and two cruisers was reduced quickly. The British Admiralty, realizing the threat that a concentration of German surface forces posed, attempted to keep the ships from going to sea by heavy Royal Air Force bombardment of Brest that damaged *Gneisenau*. Meanwhile, mechanical problems kept *Scharnhorst* in port, and *Tirpitz* could not be made ready in time for the operation. This left only *Bismarck* and *Prinz Eugen*. Nonetheless, determined to keep up the pressure on British shipping, the operation commenced on 18 May under the command of Admiral Lütjens. It famously would end with the destruction of *Bismarck* on 27 May 1941.⁷⁵

Although the drama of *Bismarck*'s loss has overshadowed the strategic importance of the operation, to the Admiralty even a reduced sortie of German surface fleets was a major threat, especially in light of Operation BERLIN's success against British shipping. The Admiralty therefore had mobilized a force of nineteen major warships drawn from the Home Fleet, Force H (stationed at Gibraltar), and convoy escorts to hunt *Bismarck* and *Prinz Eugen*.⁷⁶ This traditionally has been seen as an exaggerated response to *Bismarck*'s victory over the battle cruiser *Hood*, pride of the Royal Navy.⁷⁷ However, had *Bismarck* arrived safely in France it would have been united with *Scharnhorst*, *Gneisenau*, and *Prinz Eugen*, and perhaps even *Tirpitz*—and Germany could have commenced RHINE EXERCISE once again.⁷⁸ However, a chance torpedo hit on *Bismarck*'s rudder, delivered by an aircraft from *Ark Royal*, crippled the German ship, providing Admiral Tovey enough time to bring up his forces—before they ran out of fuel—to finish the

German battleship. The loss of *Bismarck* was a critical juncture in the war at sea, as it brought a sudden end to Raeder's surface-fleet strategy.

Although *Prinz Eugen*, having been detached from *Bismarck* before the battleship met its end, made it safely to France, never again did German surface ships challenge the Royal Navy offensively. German supply ships and auxiliary cruisers also became prime targets for the Royal Navy, with ten destroyed by the end of 1941.⁷⁹ Pressure from Britain and the United States also helped curtail resupply efforts in and from neutral ports.⁸⁰ Shocked by the loss of *Bismarck*, Hitler exerted increased personal control over the deployment of surface ships, refusing to allow further operations. Indeed, the loss of *Bismarck* marked the German surface fleet's last Atlantic operation, and in February 1942 Hitler, over Raeder's protests, ordered the remaining heavy warships to Norway to provide defense and to disrupt Arctic convoys to Russia.⁸¹

By 1942, therefore, the surface fleet largely ceased to be a major strategic threat to British operations in the Atlantic. By then, however, the U-boats had surpassed their prewar numbers and were achieving great success. Convoy attacks peaked in 1941, and in 1942 the highest proportion of shipping of the entire war was sunk. By 1943, though, the U-boat campaign also was on the wane, while Germany suffered major defeats across North Africa and in Russia.⁸² Raeder retired that year and Dönitz took over as head of the Kriegsmarine. Although the commerce-raiding potential of Germany's surface fleet never materialized fully during the war, this should not overshadow the very real threat it posed from 1939 to 1941.

After the war Dönitz claimed, "The sinking of the *Bismarck* was a grave loss for the navy. . . . On the other hand, the strong reaction of English naval forces proved that the strategic object had succeeded—that of keeping the English Fleet busy, added to the direct success attained by sinkings."⁸³

However, the German surface fleet was much more than a mere placeholder force while the U-boat arm was built up. Indeed, the war at sea between Britain and Germany was not purely a U-boat war, nor was the German surface fleet made up of antiquated ships destined to sink or expire over the course of the conflict. Even Churchill's famous comment on the U-boat menace was in reference to the years 1940 and 1941—a time that, as this article has highlighted, was in fact the heyday of the German surface fleet's attacks against British merchant shipping and when U-boat numbers were relatively low.⁸⁴ In reality, the German surface fleet played a pivotal role in the war at sea from 1939 to 1942.

In the aftermath of the First World War, many German naval thinkers reflected. They appraised the respective roles of U-boats and the surface fleet, theorizing about what functions these units could perform in a future naval war. Guided by the experience of that war and influenced by the anticipated success of ASW

measures, they generally accepted that U-boats could not be relied on as the decisive instrument of naval warfare. This was not, however, a case of traditionalist myopia. Cruiser warfare was of particular interest to Raeder, who believed that only a surface fleet, operating in conjunction with U-boats and, later, airpower, could disperse an enemy naval force sufficiently to accomplish the piecemeal weakening of its parent country, militarily and economically.

Technological development during the 1930s provided further clarity on the potential of the surface fleet. The Germans produced remarkable innovations such as the *Panzerschiff*, which seemingly vindicated their faith in the capital ship as the core of any modern fleet. This also was due in no small part to the still-primitive state of U-boat development. Still, they concluded by the late 1930s that no single form of naval power, be it U-boat or capital ships, was sufficient on its own to be a decisive force. As a result, German planners opted to build a balanced fleet that integrated submarines, aircraft, and auxiliary combatants with the battleship as its nucleus, rather than the classic surface fleet. The German navy formulated an appropriate strategy for challenging the Royal Navy, but it lacked the capability to implement it in 1939. Still, despite his initial pessimism, Raeder committed his small force to offensive operations.

Far from being merely a transitional period leading to the ascent of the German U-boats to being the foremost weapon for waging war on British commerce, the early years of World War II saw Germany's surface fleet making a concerted effort to disrupt and destroy British commerce and naval power, which created a major strategic threat to the British. The seizure of Norway and France allowed the effective deployment of German naval forces against British sea trade. The surface fleet made crucial contributions to the war at sea by disrupting and dispersing the Royal Navy, not just supporting the still-sparse U-boat fleet. Indeed, the British Admiralty devoted extensive resources to preventing the concentration of German surface forces during the war, knowing how significantly a major German thrust would threaten critical transatlantic trade. This validation of Germany's hybrid strategy in conception, if not in execution, similarly validates the importance of surface fleets in the understanding of the European war at sea, and the conduct of commerce war in general.

NOTES

I would like to thank Dr. Honae Cuffe and Dr. Joe Straczek from the Australian Sea Power Centre for their invaluable feedback on earlier drafts of this article, and Associate Professor Wayne Reynolds for his support during the early stages of the research and

drafting. I also would like to thank the anonymous U.S. Naval War College reviewers for their comments. This article is derived partly from research conducted while completing an honors thesis at the University of Newcastle, Australia, in 2016.

1. Winston Churchill, *The Second World War* (London: Cassell, 1948–1954), vol. 2, p. 529. For a review of the literature on the German navy, see Klaus Schmider, “Recent Research into the Reichsmarine and Kriegsmarine,” *Global War Studies* 8, no. 2 (2011), pp. 66–81.
2. Erich Raeder, “Reflections of the C.-in-C., Navy, on the Outbreak of War, September 3, 1939,” in *The Fuehrer Conferences on Naval Affairs, 1939–1945* (London: Chatham, 2005) [hereafter *FCNA*], p. 38.
3. Erich Raeder, *My Life*, trans. Henry W. Drexel (Annapolis, MD: Naval Institute Press, 1960), pp. 345–46. Raeder’s memoirs were ghost-written by Adm. Erich Förste.
4. See, e.g., A. T. Mahan, *The Influence of Sea Power upon History, 1660–1783* (Boston: Little, Brown, 1890).
5. See Cajus Bekker, *Hitler’s Naval War*, trans. and ed. Frank Ziegler (London: Macdonald and Jane’s, 1974), pp. 30–35; Jak P. Mallmann Showell, *The German Navy in World War Two: A Reference Guide to the Kriegsmarine, 1935–1945* (London: Arms and Armour, 1979), pp. 23–24; Holger Herwig, “The Failure of German Sea Power, 1914–1945: Mahan, Tirpitz, and Raeder Reconsidered,” *International History Review* 10, no. 1 (1988), p. 68; John B. Hattendorf, ed., *The Influence of History on Mahan: The Proceedings of a Conference Marking the Centenary of Alfred Thayer Mahan’s The Influence of Sea Power upon History, 1660–1783* (Newport, RI: Naval War College Press, 1991); Holger H. Herwig, “Innovation Ignored: The Submarine Problem—Germany, Britain, and the United States, 1919–1939,” in *Military Innovation in the Interwar Period*, ed. Williamson Murray and Allan R. Millett (Cambridge, U.K.: Cambridge Univ. Press, 1996); and Williamson Murray, “Flawed from the Start: Why Germany’s Kriegsmarine Lost the Battle of the Atlantic,” *Military History Quarterly* (Spring 2015), pp. 70–75.
6. See, for example, Duncan Redford, “From Pre- to Post-*Dreadnought*: Recent Research on the Royal Navy, 1880–1945,” *Journal of Contemporary History* 45, no. 4 (2010), pp. 866–76; Joseph A. Maiolo, “Did the Royal Navy Decline between the Two World Wars?,” *RUSI Journal* 159, no. 4 (2014), pp. 18–24; and Werner Rahn, “German Navies from 1848 to 2016,” *Naval War College Review* 70, no. 4 (Autumn 2017), p. 28. Vincent P. O’Hara, *The German Fleet at War, 1939–1945* (Annapolis, MD: Naval Institute Press, 2004) provides a broad analysis of key operations conducted by the German surface fleet, but devotes little attention to the creation of the fleet itself.
7. See Philip K. Lundeberg, “The German Naval Critique of the U-boat Campaign, 1915–1918,” *Military Affairs* 27, no. 3 (Autumn 1963), and Friedrich Ruge, “German Naval Strategy during World War II,” *Naval War College Review* 5, no. 9 (May 1953), p. 1. According to Terraine, between 1926 and 1927, “eight out of ten naval studies were concerned with U-boats.” John Terraine, *Business in Great Waters: The U-boat Wars, 1916–1945* (London: Mandarin Paperbacks, 1990), p. 169.
8. The resumption of unrestricted submarine warfare and the loss of American lives that resulted helped to sway public opinion toward believing that Germany posed a significant threat to the security of the United States.
9. These included hydrophones that could detect the sound of a U-boat under the waves and depth charges that could be detonated at a predetermined depth.
10. Derek Nudd, “The Battle of Jutland, through a Looking-Glass” *Mariner’s Mirror* 105, no. 4 (2019), pp. 430–31.
11. Reinhard Scheer [Adm.], *Germany’s High Sea Fleet* (London: Frontline Books, 2014), p. 310.
12. On 17 October 1917, two German cruisers, *Brummer* and *Bremse*, attacked a North Sea convoy, sinking nine of its twelve ships and its two escort destroyers. Henry Newbolt, *From April to the End of the War*, vol. 5 of *Naval Operations* (London: Longmans, Green, 1931), pp. 152–55, 194.
13. Arno Spindler, “The Value of the Submarine in Naval Warfare: Based on the German Experience in the War,” U.S. Naval Institute *Proceedings* 52/5/279 (May 1926), pp. 842, 850.
14. Albert Gayer, “Summary of German Submarine Operations in the Various Theaters of War from 1914 to 1918,” U.S. Naval Institute *Proceedings* 52/4/278 (April 1926), pp. 647–48.
15. Spindler, “The Value of the Submarine,” pp. 852–53.

16. Gayer, "Summary of German Submarine Operations," pp. 657–58.
17. For analysis of the Imperial Japanese Navy and the creation of the submarine fleet, see Peter Hooker, "In the Shadow of the Fleet: The Development of Japan's Submarine Force, 1917–1941," *International Journal of Maritime History* 30, no. 3 (August 2018), pp. 458–71.
18. Holger Herwig, introduction to *The Naval Strategy of the World War*, by Wolfgang Wegener, trans. Holger Herwig, Classics of Sea Power (Annapolis, MD: Naval Institute Press, 1989), pp. xv–lv.
19. Wegener, *The Naval Strategy of the World War*, p. 63.
20. Ibid.
21. Joseph A. Maiolo, "Deception and Intelligence Failure: Anglo-German Preparations for U-boat Warfare in the 1930s," *Journal of Strategic Studies* 22, no. 4 (1999), pp. 55–76.
22. Karl Dönitz, *Memoirs: Ten Years and Twenty Days*, trans. R. H. Stevens and David Woodward (Yorkshire, U.K.: Frontline, 2012), p. 14.
23. Peter Padfield, *Dönitz: The Last Führer* (repr. London: Cassell, 2001), pp. 154–55.
24. Herwig, "The Failure of German Sea Power," p. 86.
25. Keith Bird, *Erich Raeder: Admiral of the Third Reich* (Annapolis, MD: Naval Institute Press, 2006), p. 54.
26. Erich Raeder, *The War at Sea, 1914–1918: Cruiser Warfare in Foreign Waters*, p. 284, S.L. 3927, Admiralty Library, U.K.
27. Tobias R. Philbin III, "Reflections on the Strategy of a Continental Commander: Admiral Franz Hipper on Naval Warfare," *Naval War College Review* 30, no. 2 (Fall 1977), pp. 80–81. Werner Rahn highlights an assessment of using surface ships to wage a war on enemy merchant shipping as early 1898; Rahn, "German Navies from 1848 to 2016," p. 17. For an examination of strategic interest in cruiser warfare by the German navy prior to the First World War, see Peter Overlack, "The Function of Commerce Warfare in an Anglo-German Conflict to 1914," in *Maritime Strategy 1914: Perspectives from Australia and Beyond*, ed. Tom Frame (Canberra, ACT: Barton, 2015), pp. 42–66. Hipper was promoted full admiral in 1918.
28. Raoul Castex, *Strategic Theories*, trans. Eugenia C. Kiesling, Classics of Sea Power (Annapolis, MD: Naval Institute Press, 1994), pp. 102–105, 120–21.
29. Donald A. Cribbs, "The Influence of Maritime Theorists on the Development of German Naval Strategy from 1930 to 1936" (master's thesis, Army Command and General Staff College, 2004). See also Kenneth Hansen, "Raeder versus Wegener: Conflict in German Naval Strategy," *Naval War College Review* 58, no. 4 (Autumn 2005), p. 94.
30. Capital ships were defined as displacing ten thousand tons or more and possessing a main armament with an eleven-inch bore or greater.
31. The only capital ships capable of matching *Deutschland* were the Royal Navy battle cruisers *Hood*, *Renown*, and *Repulse*.
32. Gerhard Koop and Klaus-Peter Schmolke, *Pocket Battleships of the Deutschland Class* (Barnsley, U.K.: Seaforth, 2014), pp. 11–12.
33. G. H. Bennett and R. Bennett, *Hitler's Admirals* (Annapolis, MD: Naval Institute Press, 2004), pp. 26–28.
34. Joseph A. Maiolo, "The Admiralty and the Anglo-German Naval Agreement of 18 June 1935," *Diplomacy & Statecraft* 10, no. 1 (1999), pp. 93–94. Whaley has suggested that the construction of qualitatively superior warships by Germany undermined the treaty. This is somewhat misleading, as follow-on warships mainly considered the French threat and were designed not to cause tensions with Britain. Barton Whaley, *Covert German Rearmament, 1919–1939: Deception and Misperception* (Frederick, MD: Univ. Publications of America, 1984), p. 91.
35. Unsigned memorandum, Berlin, 28 August 1935, doc. no. 275 in Auswärtiges Amt, *April 1, 1935–March 4, 1936*, Documents on German Foreign Policy, 1918–1945, ser. C (1933–1937), vol. 4 (London: H.M. Stationery Off., 1962), p. 587.
36. See, for example, Jason Lavery, "Finnish-German Submarine Cooperation 1923–35," *Scandinavian Studies* 71, no. 4 (Winter 1999), pp. 393–418.

37. Günter Hessler, *The U-boat War in the Atlantic*, vol. 1, 1939–1941 (London: Tactical and Staff Duties Division, 1950), p. 109.
38. Wilhelm Deist et al., *The Build-Up of German Aggression*, trans. P. S. Falla, Dean S. McMurry, and Ewald Osers, vol. 1 of *Germany and the Second World War* (Oxford, U.K.: Oxford Univ. Press, 1990), pp. 466–67; Dönitz, *Memoirs*, pp. 61–62.
39. Karl Heinz Kurzak, “German U-boat Construction,” U.S. Naval Institute *Proceedings* 81/4/626 (April 1955), p. 377.
40. Hessler, *The U-boat War*, vol. 1, pp. 109–10.
41. Gerhard Koop and Klaus-Peter Schmolke, *Battleships of the Scharnhorst Class* (Barnsley, U.K.: Seaforth, 2014), p. 10.
42. Raeder, *My Life*, pp. 196–98.
43. For a concise history of *Bismarck*’s construction, see Timothy P. Mulligan, “Ship-of-the-Line or Atlantic Raider? Battleship *Bismarck* between Design Limitations and Naval Strategy,” *Journal of Military History* 69, no. 4 (October 2005), p. 1022. MacIntyre and Bathe erroneously claim that *Scharnhorst* was powered by diesel engines. They also characterize the *Scharnhorst* class as *battleships*, as do German sources, while other sources use the term *battle cruisers*. Donald MacIntyre and Basil W. Bathe, *The Man-of-War* (London: Methuen, 1968), p. 197.
44. Bird, *Erich Raeder*, p. 118.
45. Quoted in *ibid.*
46. *Ibid.*, p. 120.
47. Rahn, “German Navies from 1848 to 2016,” pp. 35–36.
48. At this point, Hitler still believed he could wage war on the European continent without drawing Britain into the conflict, in which case he would need a powerful surface fleet to balance the Royal Navy more than a commerce-raiding force. Bird, *Erich Raeder*, pp. 124–28.
49. Bekker, *Hitler’s Naval War*, pp. 24, 33–34. See also app. 2 of this text for the production plan of the Plan Z fleet, p. 372.
50. Quoted in Eberhard Rössler, *The U-boat: The Evolution and Technical History of German Submarines*, trans. Harold Erenberg (London: Arms and Armour, 1981), p. 112.
51. Office of Naval Intelligence, trans., “Battle Instructions for the [German] Navy (Issue of May 1939)” (unpublished typescript, n.d.), p. 9, available at history.navy.mil/.
52. *Ibid.*, p. 10.
53. See Roy O. Stratton, “Germany’s Secret Naval Supply Service,” U.S. Naval Institute *Proceedings* 79/10/608 (October 1953). For a study of the secret supply chain for the German navy in collaboration with the Spanish government, see Juan J. Díaz Benítez, “The Etappe Kanaren: A Case Study of the Secret Supply of the German Navy in Spain during the Second World War,” *International Journal of Maritime History* 30, no. 3 (August 2018), pp. 472–87.
54. “Battle Instructions for the [German] Navy,” pp. 9–10. Germany’s principle of economic warfare against Britain was reiterated in the operation orders to *Deutschland* and *Graf Spee* in the weeks prior to the outbreak of war. “Operational Orders for *Deutschland* and *Admiral Graf Spee*,” Berlin, 4 August 1939, in *FCNA*, p. 35. Raeder reflects on Plan Z at the outbreak of war in Raeder, “Reflections of the C.-in-C., Navy, on the Outbreak of War,” p. 37; and in his memoirs, Raeder, *My Life*, p. 273.
55. For the British reaction, see Joseph A. Maiolo, “The Knockout Blow against the Import System: Admiralty Expectations of Nazi Germany’s Naval Strategy, 1934–9,” *Historical Research* 72, no. 178 (June 1999), pp. 202–28.
56. “Memorandum by Admiral Doenitz, F.O. U-boats. Date 1.9.39: The Building-Up of the U-boat Arm,” 1 September 1939, in *FCNA*, p. 36.
57. Data on convoy losses from Malcolm Murfett, *Naval Warfare 1919–1945: An Operational History of the Volatile War at Sea* (London: Routledge, 2009), pp. 530–33. Overall shipping losses and surface fleet successes and losses are from Stephen Roskill, *The War at Sea, 1939–45*, vol. 1, *The Defensive* (London: H.M. Stationery Off., 1954), pp. 604–605, 615–16.
58. Hessler, *The U-boat War*, pp. 106–108. Raeder continuously requested that priority be given to the U-boats; Dönitz does not acknowledge these efforts in his memoirs.
59. Dönitz, *Memoirs*, p. 105.

60. *Graf Spee* and *Deutschland* had conducted cruiser warfare since 1939. *Deutschland* did not achieve much success. *Graf Spee*, after some success, was destroyed following the famous battle of the River Plate in December 1939.
61. The author published an earlier analysis and overview of German surface-fleet operations during the war in Peter Hooker, "Unprepared but Undaunted," *Naval History* (December 2017), pp. 14–19.
62. For operational orders, see German Naval Staff Operations Division, *War Diary*, pt. A, vol. 12, *August 1940* (Washington, DC: Chief of Naval Operations, 1947), p. 163. It often is claimed that the two *Scharnhorst*-class ships were the first. This likely is because of the change in classification of the *Panzerschiffe* to heavy cruisers during the war.
63. Bekker, *Hitler's Naval War*, pp. 206–209.
64. Roskill, *The War at Sea*, vol. 1, p. 277.
65. Koop and Schmolke, *Pocket Battleships*, pp. 124–27.
66. Bird, *Erich Raeder*, pp. 176–78.
67. O'Hara, *The German Fleet at War*, pp. 70–73.
68. For an examination of Operation BERLIN, see Peter Handel-Mazzetti, "The *Scharnhorst-Gneisenau* Team at Its Peak," ed. Philip Lundeberg, U.S. Naval Institute *Proceedings* 82/8/642 (August 1956). See also Richard Garrett, *Scharnhorst and Gneisenau: The Elusive Sisters* (Newton Abbot, U.K.: David & Charles, 1978).
69. Hessler, *The U-boat War*, p. 67.
70. Roskill, *The War at Sea*, vol. 1, p. 372.
71. *Ibid.*, p. 379.
72. Dönitz, *Memoirs*, p. 131.
73. Raeder took this success as validation of his prewar emphasis on economic warfare. Erich Raeder, "Report by the C.-in-C., Navy, to the Fuehrer on March 18, 1941, at 1600," in *FCNA*, p. 182. For the attacks on French coastal ports, see Erich Raeder, "Report by the C.-in-C., Navy, to the Fuehrer on April 20, 1941," in *FCNA*, p. 191.
74. Bird, *Erich Raeder*, p. 177; "The Operation of the *Bismarck* Task Force against Merchant Shipping in the Atlantic," undated, in *FCNA*, p. 201.
75. For an examination of *Bismarck*'s famous sortie, see David J. Bercuson and Holger H. Herwig, *The Destruction of the Bismarck* (New York: Overlook, 2001). See also *FCNA*, pp. 201–218, for documents from the German Naval Archives relating to the loss of the ship.
76. Roskill, *The War at Sea*, vol. 1, pp. 407–408.
77. *Hood* was sunk in the first five minutes of the engagement after a hit by *Bismarck* caused a detonation in the ship's ammunition magazines; all but three of the 1,418 crewmembers were killed in the resulting explosion.
78. Bercuson and Herwig, *Destruction of the Bismarck*, p. 224.
79. They were later replaced by a new class of U-boat, the Type XIV supply boat or "milch" cow.
80. Díaz Benítez, "The Etappe Kanaren," pp. 483–84.
81. Erich Raeder, "Report by the C.-in-C., Navy to the Fuehrer in the Evening of December 29, 1941, at Wolfsschanze," in *FCNA*, pp. 248–49; Erich Raeder, "Memorandum Concerning the Report the C.-in-C., Navy, Made to the Fuehrer January 12, 1942, on the Planned Passage of the Brest Group through the Channel," in *FCNA*, pp. 256–59.
82. Duncan Redford, "The March 1943 Crisis in the Battle of the Atlantic: Myth and Reality," *History* 92, no. 305 (2007), pp. 65–67.
83. Karl Dönitz, *The Conduct of the War at Sea* (Washington, DC: Chief of Naval Operations, 1946), p. 14.
84. Churchill, *The Second World War*, vol. 2, pp. 525–29.

LETTER FROM PORT MORESBY

John D. Moore



Source: "Papua New Guinea," Centers for Disease Control and Prevention, 17 August 2021, wwwnc.cdc.gov/.

As the world shifts away from the global war on terrorism toward renewed great-power rivalry, areas previously considered strategically peripheral offer the United States and its allies both opportunity and challenge. Papua New Guinea (PNG), with its strategic location in the southwest Pacific, is poised to play a role in this new "Great Game." American engagement with PNG and other Pacific Island nations that focuses on collaboration with regional allies and that smartly applies U.S. political, financial, and military power will be a key factor in the outcome. At the same time, understanding the broader regional set of

interests of allies and opponents alike will better inform policy making and improve the potential for positive policy outcomes.

A COMPLEX PLACE

Although it achieved its independence in 1975, PNG still is beset by multiple development challenges, akin to those experienced elsewhere in the Pacific and

Currently based in Australia, John D. Moore has over twenty-five years of experience supporting U.S. government, humanitarian, and private-sector operations in fragile-state and frontier-market contexts across the Middle East, South Asia, and East Africa, including five-plus years in Papua New Guinea.

parts of Africa. Yet, as seen in the national introspection displayed at the February 2021 passing of PNG founding father and first prime minister Sir Michael Thomas Somare, the country continues to show the potential to move beyond its current challenges.¹ To those fortunate enough to have lived and worked in PNG, it is at once a

Naval War College Review, Autumn 2021, Vol. 74, No. 4

breathhtakingly beautiful and a frustratingly complex place to engage. With over 850 languages, thousands of clan and subclan groups, an overlay of Christianity on local belief systems, and over 70 percent of its population living in rural—often highly rugged—areas, the complicated nature of the country cannot be overstated.² PNG occupies the eastern half of the western Pacific island of New Guinea, together with the key islands of New Britain, New Ireland, and the Autonomous Region of Bougainville, along with some six hundred lesser islands and atolls.³ PNG, with an estimated population of eight million, is the largest and most populated of the countries composing the Pacific Island area. In addition to its human complexities, PNG has an incredible diversity of geographic and natural resources.

Sharing a long land border with Indonesian Papua, PNG is a young, modern nation-state, but one that reflects and holds onto a much longer history.⁴ The trials of traditional society coming to grips with modernity have shaped PNG for decades and also will influence the way it engages, and is engaged by, the evolving rivalry between the United States and its allies and a strengthening China and those countries within its orbit. There is limited government penetration across the country, and many of the present development challenges are likely to continue for the foreseeable future. Limited institutional capacity, lack of a governmental monopoly on violence, a limited formal economy, and the need for a political leadership that can articulate, garner support for, and implement public policies that represent a shared sense of national interest are but some of the issues that PNG faces. It is essential to understand these challenges, as they shape directly the way in which the growing competition to establish favorable regional relations is unfolding.

A STRATEGIC POSITION

PNG's previous colonial power, Australia, which managed it after World War I, has a deep and enduring relationship with its northern neighbor. PNG remains Australia's largest recipient of foreign aid, and strong ties continue between the Australian Defence Force and the PNG Defence Force (PNGDF). PNG dominates the northern approaches to Australia; that, added to historical tension with Indonesia and increasing Chinese involvement in PNG and the region, explains why Australia's interest in maintaining a leading role in PNG is likely to continue.

While Australia plays an outsize role in PNG, multiple other countries also have substantial ties to the country. Japan long has been an aid donor to PNG and maintains strong diplomatic ties, and New Zealand similarly is a leading donor. Ties between PNG and other Melanesian countries, such as Fiji, continue to strengthen and grow. At the same time, Chinese diplomatic and economic



Source: Shugart, "A Chinese-Built Airport?"

investment in PNG has increased, including involvement in a mix of infrastructure projects (including energy, roads, and airports) on mainland PNG, as well as the islands of Manus and Bougainville. Similarly to the pattern seen in other countries, PNG's leaders seek to benefit from multiple points of investment in the country without compromising its sovereignty.

While memory of the combat that engulfed the then territory of New Guinea remains a key part of Australian and PNG military lore, most Americans long have forgotten their country's involvement in the campaign, much less New Guinea's strategic role in supporting the American advance through the Pacific.⁵ Some seven thousand American soldiers and airmen were killed during the New Guinea campaign, with missing-in-action records indicating that hundreds more were lost in the jungles and seas across mainland PNG and its surrounding islands.⁶

Since the 2018 U.S. commitment to join Australia's effort to upgrade the PNGDF's Lombrum Naval Base on Manus Island, many elites in Port Moresby view the country as having reemerged onto the U.S. radar. Others may recall Manus Island as playing a part in the much-debated Australian asylum-seeker policy. One of PNG's twenty-two provinces, the island sits north of the PNG mainland and is positioned along critical air and naval lines of communication linked to U.S. outposts in the Marianas and elsewhere in the Pacific.⁷ Its position enables naval and air assets based on the island to influence the area along

Australia's eastern seaboard south to New Zealand, as well as the approaches to maritime East Asia.⁸

Manus, as well as other locations in PNG, complements efforts by the United States, Australia, Japan, and their allies to expand and enhance maritime-surveillance networks to monitor vessel traffic and conduct early warning, while assisting the PNGDF to increase its basic maritime-reconnaissance and patrol capabilities. While the country is unable to house major USN surface combatants without significant and sustained investment, pre-positioning of fuel and other stocks in PNG can assist vessels operating in the region. Meanwhile, advances in aerial, surface, and subsurface unmanned capabilities hold the potential for the establishment of a network of interlocking microbases across the Pacific, in which Manus could play an important role. In addition to Manus Island, locations elsewhere along PNG's northern and eastern areas may offer the potential for both fuel pre-positioning and the basing of intelligence, surveillance, and reconnaissance assets in the future. Engagement also can span other areas of mutual interest, including research into tropical diseases, countering illegal fishing, monitoring changes in coastal as well as blue-water environmental conditions, and maritime emergency response.

RELATIONSHIPS ARE WHAT MATTER

While PNG offers opportunities to support U.S. and coalition naval operations, stronger diplomatic and military relations with PNG and other Pacific island nations are likely to prove even more critical than the physical basing of supplies or naval assets. Lessons from the Cold War, as well as post-Cold War engagement in the Middle East and South Asia, repeatedly have demonstrated that relying on merely transactional approaches rather than longer-term relation-building efforts—whether conducted in bilateral or multilateral settings—limits the potential for lasting positive outcomes. Other lessons underscore the dangers of mission creep and overreach, along with the problematic impacts that occur when tactics are mistaken for strategy.

The U.S.-Australia relationship is a cornerstone of American policy in this part of the Pacific, but Australia has limitations in its ability to manage regional engagement across the strategic-operational-tactical continuum. Given Australia's historical connections to PNG, along with PNG's proximity as Australia's nearest neighbor, successive governments in Canberra have pushed to be the lead partner for PNG and the medium through which Washington should engage with Port Moresby. Over the decades, Australia regularly has advised the United States and other allies to "leave PNG to us."⁹

However, the rising competition with China has seen the Australian position moderate in recent years, as Canberra aims to collaborate with Washington and

others to counter Beijing's growing political and economic investment in PNG. The need for the United States to bolster, and on occasion strategically to realign, allied engagement in the region is reflected in recent divisions within the Pacific Islands Forum and subsequent concerns that China may take advantage of such rifts, should Australia prove unable to resolve them effectively.¹⁰ In turn, while Australia welcomes further U.S. engagement in the region, Canberra has valid concerns over any U.S. engagement that might smack of the clumsiness Washington has shown in other regions. Genuine partnership and a willingness by Canberra and Washington both to lead and to follow, depending on shifting situational dynamics, are needed.

Capitalizing on joint efforts in the development space as a platform for increased military cooperation is not just smart but essential. The Australian Infrastructure Financing Facility for the Pacific (AIFFP) is one such framework, with Australia, Japan, New Zealand, and the United States working with the PNG government to support the country's target of providing 70 percent of the population access to reliable electricity by 2030 under the AIFFP's Papua New Guinea Electrification Partnership.¹¹

Chinese involvement in Bougainville is an ongoing concern for Australia and the United States, as are Chinese efforts to establish a fish-processing facility on Daru Island, which is located only a few kilometers from Australia's northern border and some two hundred kilometers from its mainland.¹² Chinese engagement in PNG has seen several Chinese parastatal and Chinese Communist Party-linked private-sector companies build ties to local politicians and businesses. As part of its regional initiative, China has become an increasingly important source of loans and other financial support to the PNG economy, and Beijing remains an important export market for PNG's natural resources.¹³ A Chinese-government *Guide for Foreign Investment and Cooperation*, published in January 2019, gives insight into Beijing's intent. The document characterizes PNG as a supporter of China's Belt and Road Initiative, with the closing paragraph stating, "The Chinese government calls on more powerful Chinese companies, inspired by the Belt and Road Initiative, to carry out reciprocal trade and invest in PNG."¹⁴

While the discussion of so-called debt trap diplomacy has ebbed and flowed, of likely greater importance than a specific debt percentage of gross domestic product owed to Beijing is the way Chinese loans (or other state-to-state engagements) are structured and governed. By allowing local elites access to these rent streams, China builds local leverage. Such leverage may not prove lasting, however; there are few obvious sociocultural ties between the PNG and Chinese peoples, and thus the extent to which Beijing can use transactional relationships to exert more-overt control over PNG's external orientation remains to be seen.

The Manus example is informative. At the same time as the joint Australian-U.S. effort at Lombrum is under way, Manus Island Momote Airport, financed primarily by the Asian Development Bank (ADB), is being upgraded by China Harbour Engineering Company, a subsidiary of China Communications Construction Company (CCCC).¹⁵ Worthy of note is that CCCC reportedly is supporting the construction of China's artificial island bases in the South China Sea, so Washington has targeted it for potential sanctions.¹⁶ According to politically astute Manus Islanders, the current governor is "pushing above his weight" and does not necessarily have broad support, even as he attempts to use Chinese economic involvement to advance his own narrow interests.¹⁷

While local political leaders may seek to use the rivalry with China to their personal advantage, there remains a reservoir of positive sentiment toward the United States. The historical memory of the American role in Manus and elsewhere in the vicinity during World War II is key to this, with the generation of elders who lived during that period passing on stories to successive generations. Yet geostrategic interests need both to respect and to value local pragmatism about the people's socioeconomic aspirations.

ENGAGEMENT FORWARD

In looking toward fostering a new era of U.S.-PNG relations, it is critical that the United States keep its eyes wide open regarding the country's reality. Local politics increasingly has become a means for elites to capture wealth, with the views and actions of elected leaders not necessarily representing the actual interests of the communities with which the United States may engage. Australia's engagements in PNG and Oceania offer insights into how the United States best can build and sustain long-term political-military relationships in support of American interests. USN port visits and humanitarian-assistance and disaster-relief operations, along with public-relations efforts, will continue to prove important. Participation alongside the Royal Australian Navy in training exercises with PNG counterparts, combined with U.S. provision or funding of equipment and logistical support for PNGDF littoral operations, also provides opportunities for naval forces to engage with PNG and to shape U.S.-PNG relations positively.

Beyond these traditional forms of engagement, an increased tempo of visits from U.S. Indo-Pacific Command personnel, combined with efforts by the U.S. State Department and other government agencies to strengthen diplomatic and economic relations, at the same time as the United States builds further collaboration with Australia and other allies in the region, is critical. The eventual opening of the new U.S. embassy building in Port Moresby will be an important milestone in the growing American commitment to PNG, with embassy reach strengthened by the integration of a defense attaché office within the diplomatic mission.¹⁸ Additional

interagency involvement that draws on the principles espoused in the Global Fragility Strategy would bolster efforts to strengthen U.S.-PNG relations further.¹⁹

While collaboration with Canberra and other regional capitals is essential, it also is important for Washington to foster a distinctly U.S. relationship with the PNG state and its diverse people. In PNG there is a rare spirit of openness and friendship toward the United States that often is absent in other parts of the world. Yet that sense of goodwill is insufficient absent U.S. political and economic, as well as military, investment. With China able to use strategic investments to peel away layers of elite support, engagement in PNG and elsewhere is not cost-free, yet the transactional nature of China's engagement to date offers the United States the opportunity to strengthen ties with both PNG's government and its society.

China's rise does not necessarily imply that future conflict is destined. However, where a vacuum of U.S. and allied engagement and investment exists, Beijing will be poised to fill such space. As the strategic landscape continues to evolve, ensuring a permissive peacetime environment for maritime operations while strengthening political and military relationships well prior to any potential war-fighting scenario is fundamental. The United States must work with other nations, not alone nor solely with existing regional allies. America must act with humility and listen to those with more insight regarding regional, country, and subcountry dynamics.

From the perspective of those in the region, Washington should pursue a multidimensional approach that understands and appreciates differences between "like-situated countries" that are more concerned about risks arising from great-power rivalries and those countries that are like-minded and willing to oppose the weakening of a liberal, rules-based order. Countries across the region have different interests and drivers and have different, and occasionally competing, foreign-policy priorities, as well as different capacities to counter Chinese pressure.²⁰ Efforts to move beyond the transactional aspects of state-to-state relations to relations based increasingly on shared values ultimately will prove more lasting and more supportive of American interests.

NOTES

1. Somare was a prominent PNG political leader. Often called the father of the nation, he was a teacher and radio journalist before his 1968 election to the territorial House of Assembly. Appointed chief minister of the territory in 1973, he became the country's first prime minister upon independence in 1975, and served again as prime minister on two other occasions. His formal political career ended in 2012.
2. The main religion in PNG is Christianity, although, like elsewhere, pre-Christian belief systems continue to shape the interpretation and practice of religion. For a more detailed

- overview of Christian denominations and religious minorities present, see U.S. State Dept., “Papua New Guinea,” in *2019 Report on International Religious Freedom* (Washington, DC: Office of International Religious Freedom, 2019), available at www.state.gov/.
3. The other half of the island is part of Indonesia, with West Papuan independence and associated claims of Indonesian human-rights abuses an ongoing issue. PNG is divided into four regions, with a total of twenty-two provinces across the different regions, as follows: Highlands Region—Hela, Jiwaka, Chimbu, Eastern Highlands, Enga, Southern Highlands, and Western Highlands; Islands Region—East New Britain, Manus, New Ireland, Autonomous Region of Bougainville, and West New Britain; Momase Region—East Sepik, Madang, Morobe, and West Sepik (Sandaun); Southern Region—Central, Gulf, Milne Bay, Oro, Western, and the National Capital District.
 4. PNG’s settled history is thousands of years old, with European (British, Dutch, German) engagement increasing in the nineteenth and twentieth centuries.
 5. It was over the PNG island of Bougainville that U.S. airmen intercepted and shot down a Japanese bomber carrying the architect of Japan’s Pearl Harbor attack, Adm. Isoroku Yamamoto, in Operation VENGEANCE. For details of U.S. soldiers and airmen repatriated from PNG, search the Defense POW/MIA Accounting Agency (DPAA) records available at www.dpaa.mil/.
 6. “Pentagon Enlisting Outsiders to Help Search for US WWII MIAs,” *Chicago Tribune*, 19 September 2015, www.chicagotribune.com/.
 7. See Thomas Shugart, “A Chinese-Built Airport Next Door to a Key Australia-US Naval Base?,” *The Interpreter*, 7 August 2020, www.lowyinstitute.org/. Manus Island is the largest island in what is known as the Admiralty Islands.
 8. See Ben Wan Beng Ho, “The Strategic Significance of Manus Island for the U.S. Navy,” U.S. Naval Institute *Proceedings* 144/12/1,390 (December 2018), available at www.usni.org/.
 9. Jonathan Pryke, “The Curious Case of Aid Concentration in Papua New Guinea,” *The Interpreter*, 14 February 2019, www.lowyinstitute.org/.
 10. Tess Newton Cain, “With Five Countries Set to Quit, Is It Curtains for the Pacific Islands Forum?,” *The Conversation*, 15 February 2021, theconversation.com/.
 11. Current connectivity is 13 percent. For additional detail on the AIFFP, see AIFFP, “Papua New Guinea Electrification Partnership,” media release, 30 June 2020, www.aifffp.gov.au/.
 12. For a more detailed look at Chinese involvement in Bougainville, see Rowan Callick, “Real Cost of Independence: The Referendum in Bougainville Brings Risks and Opportunities for Australia and China,” *The Australian*, 8 December 2019, www.theaustralian.com.au/. Bougainville often is seen as a potential bellwether; should it achieve independence, other provinces in PNG also may seek to secede. Like Bougainville, East New Britain and New Ireland have a closer cultural affinity to the Solomons than to Papua New Guinea, while Enga in the western highlands always has had a physical and political remoteness from Port Moresby.
 13. In 2018, data from Australia’s Department of Foreign Affairs and Trade showed China as the third-largest recipient of PNG exports, behind Australia and Singapore, with Japan in fourth place. See Australian Government, Dept. of Foreign Affairs and Trade, “Papua New Guinea—Papua New Guinea’s Global Merchandise Trade Relationships,” fact sheet, dfat.gov.au/.
 14. Graeme Smith, *China’s Guide to Investment Cooperation in Papua New Guinea*, In Brief 2019/25 (Canberra, ACT: Australian National Univ., n.d.), available at dpa.bellschool.anu.edu.au/.
 15. The ADB’s two largest funders since its inception are Japan and the United States. The People’s Republic of China is the third-largest contributor to the ADB, with Australia the fourth.
 16. Shugart, “A Chinese-Built Airport?”
 17. Bill Bainbridge and Jack Kilbride, “Lombrum Naval Base: Manus Governor Slams Australia over Plans to Develop Joint Naval Base,” *ABC News* [Australia], 20 November 2018, www.abc.net.au/.
 18. The new U.S. embassy will serve Papua New Guinea, Vanuatu, and the Solomon Islands.

19. For details on the Global Fragility Strategy, see U.S. State Dept., *2020 United States Strategy to Prevent Conflict and Promote Stability* (Washington, DC: 2020), available at www.state.gov/.
20. Kuyoun Chung, “Why South Korea Is Balking at the Quad,” *East Asia Forum*, 31 March 2021, www.eastasiaforum.org/.

REVIEW ESSAYS

THE SWARTZ FESTSCHRIFT

Robert C. Rubel

Conceptualizing Maritime & Naval Strategy: Festschrift for Captain Peter M. Swartz, United States Navy (Ret.), ed. Sebastian Bruns and Sarandis Papadopoulos. Baden-Baden, Ger.: Nomos, 2020. 373 pages. €79.

Captain Peter M. Swartz, USN (Ret.), has been a prominent figure in the maritime-strategy world since the early 1980s, playing a key role in the development and articulation of the noted 1980s *Maritime Strategy*. After retirement from active duty, he joined the staff at the Center for Naval Analyses (CNA), where he became a noted archivist and analyst of USN strategy documents, as well as an adviser to many naval officers and academics who dealt with strategy. On his retirement from CNA, two academics who had benefited from Swartz's mentorship put together a *Festschrift*—a volume of essays to honor him and his work—in this case, on maritime strategy. As the authors note, a *Festschrift* is a rather rare kind of document, whose purpose for publication is rather narrow.

Published by the German house Nomos as part of the University of Kiel Seapower Series, the volume is not likely to elicit wide readership; its hefty price tag (\$109 on Amazon) and its rather esoteric subject matter likely will deter even those otherwise interested in naval affairs. That said, for those who have a deeper interest in maritime strategy, especially the process of developing it, the volume rewards the money and time put into it. In the interest of full disclosure, I must

Robert C. Rubel is a retired Navy captain and professor emeritus of the Naval War College. At the College he served in various positions, retiring in 2014 as dean of the Center for Naval Warfare Studies.

state that I am a longtime colleague and admirer of Captain Swartz; but I also have participated in the development of maritime strategy (principally the 2007 *Cooperative Strategy for 21st Century Seapower* [CS21], but to some extent its 2015 follow-on),

Naval War College Review, Autumn 2021, Vol. 74, No. 4

and so am able to bring to my evaluation of the book a background of experience in the subject matter.

It is one thing for navies to develop war plans—perhaps the most notable of which was the U.S. Navy’s War Plan ORANGE that underpinned the service’s operations in the Pacific during World War II—but quite another to issue a document that broadly outlines the service’s strategic concept and utility argument: why the nation should invest in it. This idea for what Swartz calls a “capstone document” emanated from an article by the political scientist Samuel Huntington in the Naval Institute’s *Proceedings* magazine in 1954, in which the author wrote that a military service must have a strategic concept if it wishes to obtain public support for its claims on the resources of the society. Swartz cataloged the series of capstone documents the U.S. Navy has issued from the 1960s forward, providing a valuable resource for historians and writers.

Perhaps as important as analyzing what such documents say is understanding the process that created them. More often than not complex and bureaucratic, the developmental effort reveals much about the character of the organization that produced such a document, and indeed its relationship to its parent society, and helps one to read between the lines of such documents. The title of the book indicates, albeit a bit vaguely, that the work focuses on the process of developing maritime strategy, which is appropriate, given its nature as a *Festschrift* honoring an officer whose career was defined principally by working in the trenches of strategy development. And in fact, the first seven essays (out of sixteen total) focus on just that. They offer a fascinating insight not only into the various aspects of making U.S. maritime strategy but also, in a similar vein, into the logic and process behind German and Polish attempts to create national maritime strategies. The book is worth obtaining simply for those first seven essays.

But then the focus of the book starts to diffuse, process being replaced as a subject by substantive issues, such as a historical analysis of national commitment to sea power, Indian strategic naval issues, the utility of hospital ships in humanitarian operations, and the role of hydrocarbons in great-power competition. There exist a couple of thin connecting threads that weave through these latter essays—the influence Peter Swartz had on the essays’ authors and the elements with which naval strategy must deal—but it appears that the editors either ran out of more-focused essays or decided that the aperture of the volume needed to be widened a bit. This is not to say that the latter essays are not well written, interesting, and useful; they are. It is perhaps simply that my experience with strategy development makes me hypersensitive to such shifts in focus.

There is little point in this review delving into the specifics of each essay; suffice it to say that all are authored by people well qualified to engage their subjects. However, several stand out to me in terms of interest. The first to be teed

up—“The Accidental Dialectic: The Real World and the Making of Maritime Strategy since 1945”—is by Geoffrey Till, who adopts the metaphor of a pinball machine to describe the somewhat zigzagging and unpredictable path a nascent strategy takes from original conception to eventual execution. Maritime strategy clearly is not an engineered concept emanating from a locked room in the Pentagon (although Captain Swartz did spend time in such a room putting pen to paper for the '80s *Maritime Strategy*); it is instead an iterative, consensus-driven product that may or may not receive full acceptance from those tasked to execute it. Till strengthens his metaphor by examining both the '80s strategy and the 2007 CS21. Steve Wills's essay, “OPNAV between Strategy, Assessment, and Budget, 1982–2016,” offers a revealing window into the organizational dynamics within the Navy Staff that influenced strategy making—or the lack thereof—in the period he covers. The tug-of-war between programmers and strategists is opaque to outsiders, but it has defined the Navy's policies and approach to strategy since at least the early '80s. Anyone who wishes to parse, analyze, or judge any new Navy capstone document, such as the recently released *Tri-Service Maritime Strategy*, should read this essay.

I also found both Andrzej Makowski's and Sebastian Bruns's essays on Polish and German (respectively) maritime strategy development to be enlightening. Seeing how geopolitical logic and organizational dynamics collide in the formation of the maritime strategies of other nations provides useful perspective for U.S. planners. U.S. overall policy and strategy (support for the global liberal trading order) and the maritime component (ringing Eurasia with sea power) have been in place for so long that they have become like aquarium water in which U.S. strategists have been swimming; invisible, or at least forming an unchallenged assumption. These essays give us an overall view of the Polish and German maritime aquariums, thus helping us to get outside our own aquarium and actually see the water.

For the rest, the essay by Larissa Forster, “The Theoretical Soft Power Currencies of U.S. Navy Hospital Ship Missions,” stands out for its objective parsing of soft power. The 2007 CS21 came under significant criticism for elevating the prominence of humanitarian and disaster-relief missions to the same level as traditional war-fighting functions. Forster does not take a position on that balance but does go into the benefits and pitfalls of conducting such missions. Repeated studies since at least the '70s have failed to produce hard data on the benefits of peacetime naval presence, but Forster at least pulls some threads that reveal qualitative factors that should be considered when developing a strategy for conducting such missions.

Another attractive aspect of the volume is the diversity of the authors. There are several “old hands,” such as John Hattendorf (preface), Geoffrey Till, Eric

Thompson, Seth Cropsey, and Martin Murphy, but there also are a number of newer voices, such as Larissa Forster and Amund Lundesgaard. There also is diversity in authorial nationality, with contributors from Switzerland, Poland, and Germany to Australia and Japan, all of which adds richness to the overall perspective of the book.

The high price of the volume no doubt will be a deterrent to most potential readers; Swartz's friends likely will be the principal audience. That would be too bad, because the essays, especially the first seven, despite their relatively esoteric subject matter, constitute useful information for officers who might become engaged in the development of maritime strategy, whether in the United States or elsewhere. Libraries should stock this book, not letting its purpose as an edited *Festschrift* hide its utility as an educational reference.

ADAPTATION AND THE SCHOOL OF WAR

John T. Kuehn

Mars Adapting: Military Change during War, by Frank G. Hoffman. Annapolis, MD: Naval Institute Press, 2021. 368 pages. \$39.95.

Retired Marine officer and National Defense University research fellow Frank Hoffman's *Mars Adapting* is, first and foremost, a work of military theory. Hoffman initially achieved notoriety for his work and briefs about something he characterized as *hybrid* or *compound warfare*, since popularized alongside the rise in interest in *gray-zone conflict*.¹ This book's major contribution is similarly theoretical, but in the area of institutional learning, not modalities of war. Hoffman argues "for greater consideration of Organizational Learning Theory [OLT] to establish an analytical framework." That framework leads to a model presented in chapter 2 (where most of his theoretical discussion resides) that Hoffman devised to understand the processes by which military institutions adapt in war (pp. 40–42).

The book can be broken into three sections. First, Hoffman explains his approach, then presents his framework and model in the introduction and chapter 2. Hoffman's use of OLT results in a model that explains adaptation by organizations engaged in combat as a learning process. This model, derived from a number of social science disciplines, has four steps, with feedback mechanisms, that Hoffman labels "inquire," "interpret," "investigate," and "integrate & institutionalize" (p. 40, table 2.2). He calls this the Organizational Learning Cycle (OLC). He also identifies four attributes that contribute to something known as "Organizational Learning Capacity," which essentially is the ability of an organization to learn (or not learn). The factors are leadership, organizational culture, learning mechanisms, and dissemination mechanisms (pp. 44–54).

The second section of the book consists of four chapters, each of which focuses on adaptation in war by organizations and institutions as a means by which to test his model. He focuses primarily on armed-service institutions as the entities to which he applies his adaptation–organizational learning model. The cases proceed chronologically and cover the following: the U.S. Navy and its submarine campaign in the Pacific during World War II (chapter 3), the U.S. Air Force in the Korean War (chapter 4), Vietnam and the

John T. Kuehn is a professor of military history at the U.S. Army Command and General Staff College and a former Ernest J. King Professor of Maritime History with the Hattendorf Historical Center at the Naval War College. He retired from the U.S. Navy in 2004 at the rank of commander after twenty-three years of service as a naval flight officer. His latest book, with David Holden, is The 100 Worst Military Disasters in History (ABC-CLIO, 2020).

Naval War College Review, Autumn 2021, Vol. 74, No. 4

U.S. Army (chapter 5), and finally the Marines in Iraq at the various battles of Fallujah (chapter 6). The final chapter, comprising the third section, presents his conclusions, derived from how his model fared in each of these cases and the implications raised in the process.

The first case study shows how messy adaptation was for the U.S. Navy and its submarine force in the Pacific against Japan. While this campaign often is presented as an outstanding success, it got off to a rocky start. As Hoffman notes, problems of one kind often masked deeper problems that delayed the campaign achieving efficacy, and despite having very good submarines as the basic tool of war. This study, especially, supports Hoffman's contention about bottom-up innovation, in this case at the individual submarine crew and leader levels, as being critical to successful adaptation in war (pp. 102–103). The chapter supports as well his ideas about Organizational Learning Capacity, at least at the level of the submarine community, if not the larger Navy. This first case study also lets the reader know that Hoffman's approach includes a "warts and all" objectivity and emphasizes how contingent the adaptation process can be. Another conclusion that emerges is that adaptation in war can be not only a messy but a lethal business, and one that not always is rewarded.

The second study, on airpower in Korea and the Air Force, brings to the fore the problems of culture. At the time of the war's outbreak, that service's mind-set could be characterized as "bomber culture." Because this culture left the larger Air Force leadership in some sense myopic, Hoffman again finds that adaptation tended to bubble up from the bottom, from the fighter and attack pilots in the theater. One problem with this chapter is its conflation of airpower with the Air Force. This is unfortunate, since both the Marines and the Navy participated also, and the chapter might have provided even more grist for Hoffman's mill if it had included a more detailed look at these airpower organizations. Either that, or Hoffman might have made clear what was "just Air Force" versus the larger joint, and even coalition, air effort. It was not a homogeneous air campaign with absolute unity of command, which was indeed what the Air Force had wanted ever since 1947. In the end, though, Hoffman—on the basis of very thin evidence—gives the Air Force credit for being more adaptive than the other services (p. 152). This seems odd, given that the air components of the Marines and Navy presumably were a part of the success under discussion.

The third case study, on Vietnam, is the most critical, as one would expect. Here Hoffman does find the U.S. Army adapting, but to little effect beyond the tactical level and far too slowly in relation to the enemy. This case study emphasizes the relational dynamic of his model. Military adaptation does not occur in a vacuum; as it is often put in U.S. professional military education institutions, "the enemy gets a vote." Thus, this might be characterized as the book's "failure" case

study, illustrating why adaptation can occur but still be insufficient to achieve an organization's objectives. Hoffman finds that the result of the Army's adaptation "went no further than to reinforce the firepower-centric approach favored by the operational commander" (p. 196). Unlike the U.S. Navy's submarine experience in World War II, adaptation did not produce strategic results or lead to success in Vietnam for the U.S. Army.

In the final case study Hoffman addresses the Marines in central Iraq around Fallujah. Here again he is on solid ground, with his model holding up well in its explanatory power and its contention that organizational learning from the bottom up can lead to successful systemic adaptation and thereby have an out-size effect beyond the tactical-level battlefield. Of the four case studies, this one comes the closest to supplying what "right" looks like, especially with respect to OLC and the Marines' ability to learn quickly from their mistakes and then diffuse new ways of doing business. However, one would expect the U.S. military to have made some progress since the Vietnam War in improving its systems for organizational learning and dissemination. That did seem to be the case for the Marines in Iraq, despite the Corps suffering from considerable "forgetting" after Vietnam and leading up to the events in Iraq after 2003.

Unsurprisingly, Hoffman concludes by offering up the OLC "postulated in this book . . . as a useful framework of a complicated heuristic process" (p. 248). The case studies provide considerable support as well for his thesis that OLT is a useful approach for studying adaptation in war. Readers of this journal will find his implications (pp. 269–270) valuable when they become decision makers and leaders of organizations themselves. At that point they will be responsible, for example, for creating mechanisms to discover and disseminate new ways of doing business that lead to mission success.

The book does have some weaknesses, albeit minor. First, it is a ponderous read, especially chapter 2; at times it reads like a social science dissertation. There is an odd inconsistency in personal pronoun usage, with Hoffman switching from "I" to "we" and "us" for no discernible reason, especially since he is the only author. Despite these quibbles, students of military innovation and adaptation will find much in the book to appreciate and ponder. Military historians will find value in Hoffman's application of his model to the case studies about adaptation in war. Strategists and professional military educators alike will find the conclusions in the final chapter worth—in Hoffman's phrasing—investigating.

NOTE

1. See, for example, Frank G. Hoffman, *Conflict in the 21st Century: The Rise of Hybrid Wars* (Arlington, VA: Potomac Institute for Policy Studies, 2007).

BOOK REVIEWS

MANY WAYS TO SKIN A CAT—SOME BETTER THAN OTHERS

Navies in Multipolar Worlds: From the Age of Sail to the Present, ed. Paul Kennedy and Evan Wilson. New York: Routledge, 2020. 278 pages. \$128.

As the United States sails further into the twenty-first century, strategic discussions have swung toward a realization that any view theorizing the “end of history” is both ahistorical and a poor representation of the world around us. In the new book *Navies in Multipolar Worlds: From the Age of Sail to the Present*, a group of esteemed historians borrows the idea of multipolarity from the realms of political science and international relations to examine the historical role that naval forces have played in the interaction between great and rising powers. The results are both enlightening and strategically valuable as the United States approaches what the last National Defense Strategy called the return of great-power competition.

The effort is led by legendary historian Paul M. Kennedy, in partnership with Evan Wilson, a rising scholar in the field of maritime history. In his preface, Kennedy steams unswervingly into the question of relevance, directly addressing questions posed by former Chief of Naval Operations Admiral John M. Richardson and illuminating the historical reality that the affairs of great powers

and rising powers and their interactions with each other on the world oceans are not merely a contemporary challenge, instead forming a major part of maritime history across centuries. Wilson, in his introduction, picks up on Kennedy’s explanation of multipolarity as a concept in international-relations scholarship but deftly pivots once he has borrowed the framing, writing that “this book is not concerned with resolving the debate about the nature of the international system” (p. i). Instead, as they do best, the historians here offer their chapters—ranging in temporal coverage from the mid-eighteenth to the early twenty-first century—to illustrate and illuminate the competing dynamics of the concept rather than systematizing the present or predicting the future.

Across twelve chapters, and an afterword that really serves as a thirteenth, *Navies in Multipolar Worlds* ranges widely. Alan James examines the French navy of Louis XIV and French sea power in its interactions with the British and Dutch. Brian Chao carries the French example into the nineteenth century and offers an unexpected and valuable

look at what it means to be the world's second-most-powerful navy. Roger Knight and Evan Wilson examine the Royal Navy toward the end of the Napoleonic period, with Wilson's deep dive into British postwar redeployment and retrenchment offering a particularly relevant bit of history to a U.S. Navy that itself has experienced a shrinking of capacity since the end of the Cold War. The era after the First World War, well known for its great-power maneuvering, is covered by four authors, each from a distinct perspective. With elements of the British experience examined by John Maurer and G. H. Bennett, the Japanese discussed by S. C. M. Paine, and the Italians covered by Fabio De Ninno, the reader gains enormous insight into the truism popularized by James N. Mattis: the adversary always gets a vote.

It is not until the ninth chapter that the United States and the U.S. Navy make their appearance, as Kennedy charts the interaction between the Americans and the great powers as war clouds form and then the Second World War crashes across Europe and the Pacific. The rise of American maritime hegemony by 1945 was neither a foregone conclusion nor necessarily a surprise, as Kennedy deftly illustrates.

The post-Cold War era is discussed skillfully by Tim Choi in his examination of contemporary Danish naval developments in pursuit of Arctic power and by Geoffrey Till in his wide-ranging look at the multipolarity of the early twenty-first century. Finally, the chapter by Chinese scholar Hu Bo is a fascinating examination of how the People's Republic of China views maritime power and the history of great-power competition. While the whole book deserves a wide readership, this final chapter

provides direct contact with today's multipolarity and global competition and is enormously valuable to any strategist.

Kennedy's long list of insightful histories and Wilson's numerous books, including several edited volumes, speak to the pair's ability to bring deeply researched history together with contemporary relevance and to package it in a well-organized and readable collection. Edited volumes—particularly those, like this one, that include both well-known scholars and rising stars—are notoriously hard to edit in a way that holds together both thematically and stylistically. Yet the editors of *Navies in Multipolar Worlds* have navigated these shoals adroitly to produce an enormously valuable collection.

This reviewer has one major complaint, although it is not something that the editors necessarily could control: the price of the book. At \$128 a copy, it is almost guaranteed that the officers and strategists who should be reading these chapters will not. For a book that shares so many insights and offers today's readers so much valuable context and knowledge, it is a shame that it likely will find its way onto the shelves of a handful of research libraries and go no further.

Political scientists and international-relations scholars often tell historians that the work the latter do in the archives is the foundation of the former's efforts at social science. *Navies in Multipolar Worlds* flips that script, not only offering chapters from historians who have conducted the deep research into their topics necessary to relate clearly the complications of the past, but also offering key arguments and fascinating insights about what multipolarity is and how nations interact on the world's oceans. This

interaction has happened for centuries, and understanding that history will offer today's strategists, officers, and decision makers the background they need to think deeply about the great-power interactions of the twenty-first century.

BENJAMIN ARMSTRONG



Vision or Mirage: Saudi Arabia at the Crossroads, by David Rundell. London: Bloomsbury, 2020. 336 pages. \$27.

The active pursuit of knowledge through experience, academic study, and deep critical thought may define a lifelong learner; however, the ability to convey that same information to readers effectively is no less than a gift. In David Rundell's *Vision or Mirage: Saudi Arabia at the Crossroads*, we find its result: a treasure that is no less than a sentinel-level work on the historic evolution of the Kingdom of Saudi Arabia.

It is easy, even natural, for this reviewer and other readers to be critical even to the point of cynicism when it comes to books on geopolitics and history. Before reading this work, a colleague (who is also a war college graduate) and I listened to a virtual presentation by an opening commentator and then one by the author himself. Both of us exclaimed, "This guy is an apologist of the current leadership, without question!" Had the book not been ordered already, I fear I may have skipped it, given the opinion I developed that afternoon. What a mistake that would have been, and how terribly wrong I was in my assessment! Rundell is no practitioner of apologetics; he is a gifted storyteller and writer, and his insights into the dynamics of the Middle East and Saudi

Arabia's role in it are comprehensive. He misses none of the subtle nuances that elude some of the best writers. For any real student of the subject, this book is a treasure to be returned to again and again. If one ever has observed a master of any craft or profession—surgery, for instance—one understands and knows the joy of learning from someone who is comfortable in his element and has progressed through practice, experience, failure, and reattempts in the pursuit of excellence. This certainly is the case with Rundell's lucid explanation of Saudi Arabia's journey.

Rundell has spent his life preparing for or serving within the diplomatic sphere, beginning with his education in economics at Colgate University and MPhil from Oxford in Middle Eastern studies. Of his more than thirty years of diplomatic experience, half was spent in Saudi Arabia itself and the remainder in countries in the region or having influence in the same. If academic preparation and experience are not enough to convince, consider critical thinking as the third leg in certifying Rundell as a subject-matter expert on the kingdom. Finally, he is a gifted writer, interweaving facts, opinion, and external influences into a thesis that sticks. His ability to convey the complex in a near-layman's approach helps the reader form enlightened conclusions rather than being merely informed through expert opinion.

Readers will enjoy the format by which the writer progresses. The book is divided into five near-equal parts, each with three to five chapters that are easily digestible and leave the consumer hungry and expectant. The parts give general views on subjects such as nation creation, succession management,

stakeholder consideration, delivery of competent government, and meeting of the challenges of the future. There is scant evidence of salaciousness or vivid tale-telling of critical events merely to invoke readers' interest—for instance, there is little coverage of subjects such as Jamal Khashoggi and the Ritz-Carlton affair. Instead, Rundell's effort goes toward providing considerable insight and explanation to help readers understand the “why,” leaving them to draw their own conclusions. In contrast, many of the available books out now use such particular events to draw in readers and keep them interested. Rundell uses history to analyze the decision-making and actions of Saudi rulers, and applies them to current events and personalities as a predictor of what the future may hold.

Like many readers, the reviewer picks up a new book and ruminates on what can be drawn from an initial review of the title, cover, and introduction; I myself do not even begin to read the content until I have considered these for a couple of days. Rundell gives the initial impression that he is looking at Prince Mohammed bin Salman (MBS), his “Vision 2030,” and whether it can bring the kingdom through its current crossroads into the future. What Rundell delivers is an analysis of how the Al Sauds have approached many crossroads in the past, to provide a prediction of how its current leadership will proceed in the future. Readers who study this work and the history of Saudi Arabia will gain insight on what is to come. Regardless of what you think or have heard, MBS is right on track with the history of his predecessors.

JOHN W. STRAIN



Escaping the Conflict Trap: Toward Ending Civil Wars in the Middle East, ed. Paul Salem and Ross Harrison. Washington, DC: Middle East Institute, 2019. 213 pages. \$14.95.

Civil war has been a defining reality of the Middle East for decades. The conflicts in Iraq, Libya, Syria, and Yemen are just the latest examples of countries squandering their blood and treasure while achieving inconclusive political ends. Even more troubling, civil wars in these countries often lead to a “conflict trap”; war devastates the economic, political, and social fabric of the nation, trapping it in a vicious cycle of unending violence.

In *Escaping the Conflict Trap*, editors Paul Salem and Ross Harrison have brought together academics and practitioners to help shed light on the causes of and challenges posed by civil wars in the Middle East. The volume is written to appeal to a broad audience, including academics, practitioners, and “interested citizens.” The readings offer valuable academic and policy insights on specific civil wars while remaining accessible to the general reader. However, what makes this book truly unusual is that it also includes potential courses of action that might help end a few of the region's civil wars.

Escaping the Conflict Trap is structured to address what the editors assert are three “gaps in the existing discourse of civil wars in the Middle East” (p. ix). Salem in chapter 1 and Harrison in chapter 3 assess the historical and geopolitical dynamics, respectively, of civil war in the region. Salem sets the context for the volume by providing a useful synopsis of the “patterns, definitions, and dynamics of civil wars” in

the region during the twentieth century (p. 1). Borrowing from the thoughts of Carl von Clausewitz that civil war too is a continuation of politics by other means, Salem asserts that war termination is fundamentally a political challenge. One could assert that this is especially true given the complicated variety of actors involved in the conflicts in question, ranging from irregular armed groups to regional and great powers. For his part, Harrison examines the economic, social, religious, and political factors that drive civil conflicts within and among nations in the Middle East. These two framing chapters shine a light on similarities and differences among conflicts in the region and the ebb and flow of power and grievances across history. Both chapters also provide a comparative analytical framework for the more detailed historical analyses in the remainder of the book.

The volume also directly addresses the challenges of ending civil wars. Jessica Maves Braithwaite's chapter addresses some causal relationships that may lend themselves to a more protracted conflict, such as the number of warring groups and the existence of "spoilers"—extremist organizations that marginalize moderate elements—that prevent the progress of negotiated settlements in protracted conflict. Of particular note, she argues that biased third-party mediation produces better results than that of neutral parties, which is counter to conventional wisdom. Chester Crocker continues on a similar theme toward the end of the book in his discussion in the chapter titled "Diplomacy of Engagement" about strategies to change a "target's behavior towards more cooperative and constructive policies" (p. 188).

The regional-specific chapters are written by practitioners with direct and indirect experience in specific countries; they cover the civil wars in Afghanistan, Iraq, Libya, Syria, and Yemen. The chapter on Yemen by Gerald Feierstein is a particularly welcome inclusion in this type of study because it contextualizes current complex challenges within a broader historical and cultural narrative. The chapter also raises the question of how power is transferred within societies in which the stakes are extremely high and within which the settlement of the last conflict can resonate and continue to undercut the current political status quo. This is a good reminder of Clausewitz's words that "results of war are seldom final," shifting the discussion back to how the conflict-termination process shapes the long-term acceptability of the new status quo.

Moreover, as foreign-policy attention shifts to the presence of NATO and American troops in Afghanistan and Syria, the remaining chapters in this edited volume—on Iraq, Afghanistan, Syria, and Libya—will become rereads for policy makers and their staffs. In particular, these chapters provide the opportunity to revisit the roles of history, culture, sectarianism, and the bitter aftertaste of previous conflict-resolution experiences and consider how they will help to shape expectations and map out current challenges. All four of these chapters also consider the powerful role of external actors in amplifying grievances and accelerating the breakdown in existing political settlements.

In 2021, as the spotlight returns to all the states examined in this volume, the book is a sobering reminder that very little success in transitioning to a stable,

new political outcome will be found in a stand-alone approach that emphasizes military solutions to end conflict. Moreover, it is perhaps discomfiting to read that the political-settlement process in states that experience civil wars does not lend itself to an easily replicated road map. Rather, this book provides nuanced and thoughtful analytical windows into the similarities and differences among these civil wars and some blunt assessments from experts concerning the limitations and possibilities of war-termination processes.

KURT BUCKENDORF



The Kaiser's U-boat Assault on America: Germany's Great War Gamble in the First World War, by Hans Joachim Koerver. Philadelphia: Pen and Sword, 2020. 360 pages. \$34.95.

George M. Cohan's 1917 patriotic anthem "Over There" was written to encourage young American men to enlist in the military and fight with determination in Europe, such that "we won't come back till it's over, over there." What most Americans did not expect was that German forces, specifically those of the Kriegsmarine, might seek to fight in American waters—"over here." Military historian Hans Joachim Koerver's engaging history of that effort affords readers a detailed study of an oft-overlooked aspect of the First World War. The devastating effects of German U-boat technology and warfare in the Second World War had their genesis in the experience of and lessons derived from undersea operations of the First World War. Providing a study of diplomatic and economic aspects of the U-boat

operations against the United States as well as the tactical and strategic use of the U-boats, Koerver provides a volume that is extensively researched in primary and secondary sources, yet very readable. Numerous charts, graphs, and photographs enhance the volume. Additionally, four appendices, including one providing copies of pertinent documents, supply resources for those wishing to do further study.

Of particular note to those with an interest in the U.S. Navy in Newport, Rhode Island, and the Naval War College is Koerver's presentation of the *U-53* incident of 7 October 1916. The day after *U-53* left Newport, it boarded one U.S. merchant vessel, reviewed the cargo list, and let the ship pass; however, it then sank five non-U.S. ships in the vicinity of the U.S. lightship *Nantucket* (LV 112)—two of them in the presence of seventeen neutral U.S. destroyers from Newport.

In a volume containing much information and many details, readers will appreciate the presentation of the material in fifty-eight short chapters grouped into five sections, one for the prewar setting and one for each year of the war, excluding 1918. The author addresses many aspects of the U-boat assault and views the ethical and legal dimensions of Germany's unrestricted warfare in 1917, as well as a host of other matters, such as U-boat construction, manning, armament, tactics and operations, strategic significance, and propaganda. Yet the work is balanced and affords readers—whether they begin with little knowledge of U-boat operations or greater knowledge and interest—a very useful volume. Ships receiving individual chapters pertaining to their destruction are RMS *Lusitania* (7 May 1915), SS *Arabic* (19 August 1915), and SS *Sussex* (24 March

1916), aboard each of which U.S. citizens died. Each ship was attacked prior to America's entry into the war, and each attack initiated diplomatic fervor and furor from President Woodrow Wilson and the United States. Each attack was avoidable, did little to further Germany's war aims, and significantly damaged the country's international reputation and image. Yet it was not these three ships that Wilson referenced in his 2 April 1917 war message to Congress; rather, it was the sinking of three U.S. merchant ships—SS *Vigilancia* (16 March 1917), SS *City of Memphis* (17 March 1917), and the tanker SS *Illinois* (18 March 1917)—that became the tipping point for America's entry into the war.

As mentioned, the text is interspersed with numerous photographs and charts that supplement the content. Readers will find the book to be an enjoyable and engaging work. The several appendices, whose contents include photographs of decoded German documents from Room 40 within the directorate of intelligence of the British Admiralty, enhance the work by providing a glimpse of the tedious yet significant work of intercepting and decrypting German naval and diplomatic traffic, including the Zimmermann telegram, to which the author devotes several pages. The book's title is somewhat misleading, in that out of five sections only one is devoted to the U-boat assault on the United States. A more detailed index would benefit readers. Some readers will wish for more details on specific boats or incidents, but Koerver states that he is writing for a general audience (p. vii). Thus the work should be read by those who seek to gain a broader understanding of the First World War at sea and the importance of U-boats in that conflict.

TIMOTHY J. DEMY



The American Way of Empire: How America Won a World—but Lost Her Way, by James Kurth. Washington, DC: Washington Books, 2019. 464 pages. \$30.

In the second year of the Peloponnesian War, the Athenian people reproached Pericles for bringing invasion, plague, and ruin upon them. Pericles warned his fellow citizens that Athens possessed an empire and that, while it might have been wrong to take it, it would be unsafe to let it go. Persuaded, the Athenians persisted with policies that made them even more enemies, including among erstwhile allies, ultimately leading to the dissolution of their empire. In *The American Way of Empire*, James Kurth draws on but departs from Pericles as he offers his own warning: that America no longer possesses an empire, and—to those still seeking to preserve this fallen empire—it would be unsafe *not* to let it go.

Kurth, a professor emeritus of political science at Swarthmore College, is a luminary of U.S. foreign policy. A PhD from Harvard who studied under Samuel P. Huntington, to whom he dedicates the book, Kurth is a member of the Council on Foreign Relations and a senior fellow at the Foreign Policy Research Institute. Kurth has authored over 120 articles, and he revised some of them to serve as chapters in the book's five substantive parts, which are titled "Hegemony," "Ideology," "Strategy," "Insurgency," and "Political Economy." This composition allows the reader to absorb the book in chapters or parts or as a whole. That the chapters derive from articles originally published as early as the 1990s yet address current crises so deftly reflects Kurth's prescience and the book's timeliness.

With compellingly creative analysis, Kurth reveals the causes of the American empire's remarkable rise and abrupt fall. After the Second World War, the United States cemented three hegemonic alliance systems as part of the "American way of empire." However, that empire made trade-offs that became time bombs. For example, the United States opened its market to its East Asian allies to keep them out of China's orbit, but in doing so it hollowed out the core of American industry. Because of these imperial policies, the American empire has fractured regionally in Europe, Asia, the Middle East, and Latin America—and functionally in its military, economic, political, and ideological dimensions. In the power vacuums created by the demise of the American empire, states such as China, Russia, and Iran now seek their own spheres of influence. According to Kurth, it did not need to end this way.

Kurth attributes the precipitous decline of the American empire to the deliberate decisions of its elites. He brings together American intellectual history, political economy, culture, and even religion to explain how this empire lost its way. For instance, he describes how the Marshall Plan originally joined the Midwest's industry, with its conservative nationalist tradition, and the Northeast's finance, with its liberal international tradition, to form a grand domestic alliance to promote international free trade as a pillar of empire. However, over time, an insidious alliance of ideas and interests coalesced among American elites who, like Pericles and the Athenian elites before them, insisted on defending and extending the empire to the point of collapse.

America's elites ultimately succumbed to the tragic flaw of hubris, in the aftermath

of the Cold War. Thoroughly convinced that "American ideas [were] universal ideas," they led the United States on the most ambitious and disastrous imperial project yet, seeking "to reinvent the nations of the globe in [the U.S.] image" (p. 262). American elites ignored not only the sensibilities and struggles of their fellow citizens—who today distrust their leaders, just as the Athenians once doubted Pericles—but also the interests of other states and the value systems of other cultures. They also disregarded the exigencies of international relations. Faced with the end of the American empire, they must come to terms with the enduring lesson of history: that "power and realities almost always confound ideology and visions" (p. xviii).

The United States can aspire only to shape, not to dominate, the twenty-first century. America must abandon any illusion that it can remake the world in its image, particularly given that it has lost its image of itself. In fact, Kurth quips, if the United States has any hope of steering a course toward peace and prosperity, "America will have to become more American than it has been in recent years" by returning to the values of the American Creed and the virtues of the American republic (p. 394).

The American Way of Empire gives the reader much to ponder, without being ponderous. Kurth entertains and educates in equal measure, delighting the reader with many witticisms and turns of phrase, often turning common wisdom on its head in the process. In a discerning inversion of the well-worn American conception of containment during the Cold War, Kurth wryly observes that "in actuality, the most important containment going on had been that by the Soviet Union of the

United States” (p. 23). Herein lies an admonition for the policy makers and national-security professionals who should read *The American Way of Empire*: too often America sets forth to change the world, without realizing that just as often the world changes it.

JEFFREY P. ROGG



Oilcraft: The Myths of Scarcity and Security That Haunt U.S. Energy Policy, by Robert Vitalis. Stanford, CA: Stanford Univ. Press, 2020. 224 pages. \$24.

Energy analysts often gripe that everyone who drives a car or owns a lightbulb thinks this provides sufficient training to claim expertise in energy markets. In his new book, contrarian University of Pennsylvania political scientist Robert Vitalis takes to task mainstream experts who equate oil with power. At times breezily polemical, this concise but richly researched foray is a valuable contribution to the prolific “geopolitics of energy” literature in fashion today.

The incisive commentary begins with the title: the word *oilcraft* is a play on *witchcraft*, not *statecraft* or *tradedcraft*; it is explicitly pejorative, not complimentary. Laying his cynical cards on the table from the outset, Vitalis is unrelenting in his critique of the “modern-day form of magical realism” (p. 6) that presumes that oil is the “lifeblood or weapon or prize” (p. 23), constituting an axiomatic truth that consequently requires a special relationship with Persian Gulf nations, military commitments around the world, and strategic deal making with unsavory regimes. He derides as a pernicious myth the “need once to control and now secure access, stabilize prices,

or prevent hostile powers from holding the world economy hostage” (p. 122). Vitalis names names and spares none, reserving his most incendiary ammunition not for policy makers, as one might expect, but for his fellow academics.

The analytical core of the book comprises detailed surveys of energy-security discussions in the 1920s and 1970s. In the earlier period, policy makers panicked about Britain’s expansive control of global oil supplies, which prompted the rise, within the burgeoning field of international relations, of the so-called Columbia School, which dismissed great-power competition as an unnecessary and counterproductive geopolitical framework for consideration. The lessons of these debates, Vitalis argues, were long forgotten by the time resource scarcity again seized the nation’s consciousness. This later period, beginning around 1973, is broadly misunderstood. For instance, it was a group of Arab countries that imposed the infamous oil embargo, not the Organization of the Petroleum Exporting Countries; the upward pressure on oil prices—driven by a complex host of reasons, including turbulent international financial conditions—predated the Yom Kippur War, and therefore was not caused by it, as is sometimes portrayed. One of the most interesting points Vitalis makes is that the resulting higher oil prices fueled greater development of oil resources in the United States (e.g., in Alaska and the offshore Gulf of Mexico).

Other episodes make brief cameos, recast in a petroleum-tinted light: the so-called Tanker War between Iran and Iraq, Operations DESERT STORM and IRAQI FREEDOM, the development of the Carter Doctrine, the deployment of U.S. Marines to Lebanon, and the slew of

terrorist attacks that came to characterize the American presence in the region.

This historical analysis builds up to the political climax of the book. Echoing his previous work on American foreign policy in the Middle East, Vitalis gleefully dismantles the widely accepted assertion that the Roosevelt administration and the Saudi royal family agreed to a nebulous “oil for security” deal during World War II. According to folklore—which Vitalis skewers—the United States, ever since those bygone days, has protected the kingdom (including with deadly force) in an explicit exchange for petroleum access. Instead, Vitalis argues that oil markets would function just fine regardless of who holds the keys to Abqaiq, Ras Tanura, and the rest of the Saudi kingdom’s oil bounty. He asserts that energy-security concerns are employed misleadingly to justify the perpetuation of this polarizing alliance, about the merits of which he is deeply skeptical. The author writes with admiration for the similarly skeptical scholars of the 1920s and 1970s who challenged the conventional wisdom about energy security as the basis for foreign-policy decisions (particularly in terms of military intervention).

Robert Vitalis makes bold and clear claims. One wonders whether a mere 134 pages of text (before the acknowledgments and endnotes) are enough to marshal the necessary evidence and argumentation. He succeeds in building his case, but the reader is left wanting a bit more. The book also is peppered with an unfortunate and thoroughly unnecessary number of typographical errors that detract from the cutting prose and punchy critiques of the existing literature.

Although mentioned only in passing, the twenty-first-century growth in domestic U.S. oil production and America’s rise to prominence as a significant exporter of petroleum already are prompting a reevaluation of long-standing national-security policy. Whether this reevaluation necessarily entails a reduction in, realignment of, or reckoning with respect to the nation’s presence overseas is a contentious proposition. Even asking the question is enough to raise hackles in Washington, where bureaucratic inertia enables the circling of wagons with impressive speed. The case studies that Vitalis presents remind us that these debates are not new. Readers may not agree with all his conclusions—and certainly not with every sarcastic remark he directs toward other scholars—but the argument is challenging, brisk, and unwavering. It warrants close examination by regional specialists and global strategists alike, and, perhaps, a full-fledged rebuttal from the alleged sorcerers of oilcraft.

TRISTAN ABBEY



A Brief Guide to Maritime Strategy, by James R. Holmes. Annapolis, MD: Naval Institute Press, 2019. 200 pages. \$24.95.

Naval training, by necessity, is anchored in developing technical and tactical expertise quickly. All newly minted officers preparing to serve on, above, or below the surface of the ocean are assimilating how-to skills. Demands on their time do not diminish in their first operational command, where training continues and expectations increase. In this busy and technology-heavy environment, there often is little time

left for philosophical or historical discourse on big-picture topics. For this reason, Professor Holmes, who holds the J. C. Wylie Chair of Maritime Strategy at the Naval War College, has written *A Brief Guide to Maritime Strategy* to expose young officers to the central characters, foundational principles, and key terms of maritime strategy.

Maritime Strategy is centered primarily on the writings of Alfred Thayer Mahan, whose theories have influenced American policy for more than a century. Holmes begins by introducing one of Mahan's bedrock principles: "The first law of states" is for a state's own "self-preservation" (p. 2). To accomplish this task, the nation must be equipped with the means of producing goods, have the ability to ship those goods, and then have access to foreign markets. These three elements—production, shipping, and markets—are the primary ingredients of sea power. The major content of the book is a primer on how a nation *generates, maintains, and enforces* sea power—the "saltwater global supply chain" (p. 51).

Generating sea power has as much to do with a nation's physical qualities as it does with human characteristics. Geographical features play a central role in whether a nation uses the sea to its advantage. Countries such as Great Britain and the United States are fortunate in this regard, having easy access to the sea and multiple ports for shipping and receiving goods. But other factors, such as national character, are equally important. Does the nation view itself as having a "saltwater culture" (p. 38)? Does it place value on ingenuity in producing and shipping goods? Furthermore, does the government promote maritime industry through adequate

laws and the financing needed to maintain the shipping enterprise?

Maintaining the virtuous cycle of sea power is the subject of the second part of the book. Here, Holmes extrapolates the need for commercial and naval ports in strategic places throughout the world. This chapter leads the reader on a fascinating historical journey of Mahan's quest for better access to markets in East Asia. Mahan's influence was critical in the development of the Panama Canal, which he envisioned as the "gateway to the Pacific" for American shipping (p. 68). He also foresaw the importance of the Hawaiian Islands as a "steppingstone" across the Pacific (p. 65).

The final chapter examines the particular role of a navy in the exercise of national power—*enforcement*. America strives to use the diplomatic process to "win without fighting" whenever possible (p. 116). However, the U.S. Navy's crucial role is to serve as a "backstop for diplomatic efforts" in the quest to "open, nourish, and safeguard commercial access to important trading theaters such as East Asia and Western Europe" (p. 2).

Maritime Strategy is excellently written. In an accessible and nonthreatening way, it introduces the reader to critical topics addressed by major theorists. Comprising only three chapters and a total of 150 pages, it easily can be read in a short time. Two items are especially noteworthy. First, Holmes's analogy of the sea as a *maritime commons*—a vast marketplace where goods are bought and sold—is memorable and apt. Unlike the commons of colonial New England, though, where the local town enforced the rules of trade, there is no sovereign over the sea. For this reason, nations must work together to enforce the law of the sea to ensure maritime freedom. A second item worth mentioning is

the sea's ability to link us back to our forebears. As Professor Holmes states, "Seafarers join something larger and older when they go down to the sea in ships" (p. 14). Not only does the sea connect us as a global community, but it also has the ability to connect us with our past and with our naval and military history and heritage.

Wardrooms and classrooms would do well to add *Maritime Strategy* to their list of books to discuss. Training commands should consider including this book in their curricula for new accessions, as it provides a big-picture view of the Navy's place on the national scene.

SCOTT CAUBLE



Coalition of the UnWilling and UnAble: European Realignment and the Future of American Geopolitics, by John R. Deni. Ann Arbor: Univ. of Michigan Press, 2021. 274 pages. \$75.

In this exceptional and contemporary analysis, John R. Deni provides a sobering view of the largest U.S. European military allies and their abilities to function as effective partners. In short, the current and future pictures are not pretty. As the book's title indicates, whether one considers the United Kingdom, France, Germany, Italy, or Poland, these states suffer from considerable—arguably profound—military limitations that will circumscribe their ability to serve as military partners to the United States. Likewise, whether one focuses on demographics (declining birth rates), national economies that cannot support military ambitions, the absence of advanced military capabilities, or strategic directions that do not square well with those of

the United States, the applicability to these allies of all these factors, to varying degrees, helps to explain how significant the barriers in place are.

Certainly, previous scholarship has examined European military shortcomings. Many have written on American military preeminence in NATO's operation in Kosovo; others have demonstrated the different strategic perspectives and European military limitations apparent in NATO's bombings in Libya. Deni provides an updated analysis that looks closely at the historical "big four" European allies, plus Poland.

For the United Kingdom, Deni notes that over the last decade major reductions in defense expenditures have cut deeply into British military capabilities. He also devotes much analysis to the British economy, noting that Brexit similarly will cut deeply into Britain's tax base, effectively preventing the British from investing in their military forces, even if they had the political desire to do so.

The author's contrasting analysis of Germany is especially perceptive and revealing. He makes the case that the Germans' strong and robust economy, favorable labor market, and budget surpluses provide the *potential* for them to play a far more significant role in global security. The German public, however, remains generally opposed to the projection of German military force; opinion polls even indicate that Germans are among the least likely, compared with respondents from other European allies, to express a willingness to use force to defend another NATO ally if it got into a "serious military conflict" with Russia (p. 72). Political-elite and youth opinions differ on this point, yet the dominant norm remains

in place, which has translated into “debilitating shortcomings” for German military capabilities, despite having an economy that truly has prospered and will continue to do so (p. 66).

Deni sees France as the closest U.S. ally in terms of strategic outlook; the French hold views nearly identical to Americans’ in these areas, and their perspectives on the role of the military as a foreign policy tool are similar as well. But the author argues that France’s foreign and military visions cannot be sustained, owing to the country’s inadequate economic growth. Moreover, some political-sovereignty issues still stand in the way of more-fruitful interstate dialogue.

Among the allies examined, Italy stands out as the one that has fallen the furthest. Owing to a deeply troubled economy and a backward environment on technology and innovation—along with the inability of political moderates to face these challenges effectively, which has resulted in the rise of populist politicians—the Italian military is only a shadow of what it once was, with the likely prospect of additional languishing ahead. With an aging population and a military that increasingly is used as an internal dual-use security force, Italy’s prospects as a meaningful military ally continue to shrink.

Deni’s last study is devoted to Poland, which, unlike nearly all other European countries, has spent consistently and meaningfully on defense over the entire last decade. Russian military incursions into Georgia, Crimea, and eastern Ukraine, along with Russian military activities in Kaliningrad, build directly on Poland’s historical fears of an aggressive and expansionist Russia. Yet despite Poland’s economic strengths, new military

capabilities, and legislation that requires ongoing defense spending, it suffers a severe limitation: its singular focus on Russia, with its resultant investments in territorial defense. This limits its ability to partner with the United States.

The author concludes with several recommendations for how to address these significant shortcomings. Among his proposals is sharing more American military intelligence with allies, especially Germany, in an effort to increase transparency on existing global threats and challenges. Deni also recommends that the United States fully use international organizations, including the United Nations and NATO, given the high strategic value the allies place on them. And he encourages the United States to support a strong European security identity, which may help translate into greater defense spending, and perhaps the development of specified niche capabilities among the allies.

This book is impressive. Deni has used an extensive body of scholarship and data on each of these countries. He also conducted a multitude of interviews with both American and foreign defense officials. While some of his policy proposals certainly will generate debate, his ideas are welcome, as they provide some optimism that positive change is possible and that policy directions worth pursuing do exist.

RYAN C. HENDRICKSON



Dangerous Narratives: Warfare, Strategy, Statecraft, ed. Ajit K. Maan. Washington, DC: Narrative Strategies Ink, 2020. 188 pages. \$45.

This century’s increased social media and other forms of technological

sophistication has expanded what security practitioners consider to be a domain of conflict. In *Dangerous Narratives*, Ajit Maan and his coauthors argue that the cognitive and narrative domains of conflict, if not always strategic centers of gravity themselves, certainly have produced strategic effects on those centers. Only recently, though, through a combination of information operations against the United States and recent foreign-policy failures, has the national-security community recognized the growing significance of this domain. Professionals, researchers, and students interested in the strategic, policy, and national-security implications of how narratives can create meaning will find *Dangerous Narratives* a thought-provoking exploration of what the future of conflict will look like.

Dangerous Narratives is a contributed volume by Dr. Ajit Maan and nine additional security practitioners and scholars, each of whom contributes a chapter that develops Maan's conceptual foundations of "narrative identity theory" and "narrative warfare"; together they examine these concepts' application to the realms of kinetic warfare, strategy, history, education, and law enforcement. Maan, a narrative scholar and the chief executive officer of Narrative Strategies (NS), a consulting firm, introduces us to the concept of *narrative warfare*: a struggle not over the truth value of information but over the meaning of information. Even though research has shown the importance of the narrative and cognitive spaces in human behavior, Maan argues that this knowledge is not being applied to its fullest in the field of national security.

In section 1, Dr. Howard Gambrell Clark, the president of NS and a counterextremism specialist, and Lieutenant Colonel Brian L. Steed, USA (Ret.), associate

professor of military history at the U.S. Army Command and General Staff College, examine the seeming disconnect between various narratives and their associated kinetic conflicts. Drawing on historical conflicts and the relevant strategies of past military leaders, Clark describes ways in which conflicts have been and can be resolved through nonkinetic means via narrative-led subversion—the advantage of such a strategy being that it is limited only by an individual's creativity. Steed artfully translates the concept of the narrative landscape by comparing it to a physical one that can be eroded, controlled, and exploited, in this case by actors and crafty "narrative entrepreneurs" who use social cleavages to gain a narrative advantage.

Section 2 features case studies and analyses of weaponized narratives, both past and present. Brigadier General Tom Drohan, USAF (Ret.), professor emeritus at the U.S. Air Force Academy, provides two in-depth analyses, of China's and of Russia's narrative strategies, including how a well-designed narrative can target opponents using Colonel John Boyd's observe-orient-decide-act (i.e., OODA) loop—to disastrous effect. China's strategic use of information condenses the observe and orient steps into one, enabling faster decision-making and more-predictable actions. Russian narratives distort how a target orients itself and influence its will and capacity to observe, affecting how the target decides and acts within the loop. Paul Cobaugh, a retired Army warrant officer and special-operations expert, imparts three insightful personal learning experiences from his deployments to Afghanistan. He explains how identity, content, structure, and story create a narrative, and how it can be used strategically to advance successful military

operations. Dr. Aleksandra Nesic, a visiting faculty member at both the Army's John F. Kennedy Special Warfare Center and School and the Joint Special Operations University, closes out the section with a fascinating exercise in historical-narrative analysis of the 1389 Battle of Kosovo, including how political elites in Bosnia recontextualize and weaponize it in different ways for strategic purposes.

The final section turns toward the narrative's effect on statecraft and stability. Colonel Christopher Holshek, USA (Ret.), critically assesses U.S. forces' need to institutionalize the effective training and deployment of informational power via a whole-of-nation strategy, citing the success of the Marshall Plan in cultivating a durable narrative in Europe against the Soviet Union. Dr. Frank G. Straub, director of the National Police Foundation's Center for Mass Violence Response Studies, follows with an assessment of how narrative can influence police-citizen relations. Through neighborhood-level efforts at cooperative and community-involved policing, departments can use narrative to build up trust and legitimacy to better protect citizens. The book closes with a cerebral, future-forward piece on the predicted standardization of soft-power theory through the "noosphere," written by retired RAND political scientist Dr. David Ronfeldt and Naval Postgraduate School professor Dr. John Arquilla. They argue that true soft power has been misconceived and therefore does not have the same breadth of theory for application as is found for hard power, resulting in the former's underuse. They hypothesize that the eventual development of education and training in "noopolitik" will be critical for the strategists of the future.

Dangerous Narratives is an eclectic work that covers a surprising range of topics

that one might not consider at first glance to be connected. The book is a testament to the far-reaching interest that the psychological and cognitive realms attract across the field of national-security policy. As I read each chapter, I consistently was captivated by the diversity of thought that such a specific conceptual framework was able to generate. This no doubt was because of the skill with which all the authors took a deceptively complex concept and, in their own terms and in the context of their own experiences, described it clearly. The result is an excellent introductory handbook for the student-practitioner who seeks to understand the impacts of narrative on national-security strategy.

NICK OMICHINSKI



Something of Themselves: Kipling, Kingsley, Conan Doyle and the Anglo-Boer War, by Sarah LeFanu. Oxford, U.K.: Oxford Univ. Press, 2020. 381 pages. \$29.95.

Today, the Boer War—or, more accurately, the Second Anglo-Boer War (1899–1902)—is likely to be viewed as something quaint and obsolete, a sepia-toned daguerreotype from the waning Victorian era. Lacking the gravitas that comes with the antiquity of the Peloponnesians, its issues and lessons seem to have been swept away by the industrialized, mass-produced warfare of the twentieth century and a general distaste for the conflicts of empire.

However, in its time the Boer War riveted the attention of the British Empire and, indeed, the world. Magnet-like, the cockpit of conflict drew three very different, particular Britons: Arthur Conan Doyle, Rudyard Kipling, and Mary Kingsley. All enjoyed some level

of fame; all were published authors; and two were considered scientists. But they experienced the conflict from very different backgrounds and points of view, and they saw the war through very different lenses. Kipling and Doyle were affected profoundly by their experiences in South Africa; Kingsley died there.

Sarah LeFanu deals with each of her subjects separately and chronologically, devoting the first six chapters of the book to examining Doyle, Kingsley, and Kipling up to the point when the war broke out. This section is essential to placing these individuals within the context of their times. While each has a compelling story, it is hard not to be most engaged by the biography of Mary Kingsley. Of the three, Kingsley is more likely to be unknown, although she should not be.

An autodidact, Kingsley was inspired by her father's tales of wanderlust, and she both conformed to and pushed against the expectations demanded of the women of empire. Although she was desperate for adventure, she often had to stay at home to care for her brother. When she did get an opportunity to explore the rivers of West Africa, she did so with a vengeance, paddling miles upriver, discovering new species of fish, and compiling copious notes that formed the basis of her first book, *Travels in West Africa*. Later, as a respected authority in her field, she engaged in what today would be called "flame wars" with other experts when it came to Britannia's African trade policies. Yet the fact that Kingsley championed the British Empire did not make her blind to imperial faults.

In contrast, Kipling and Doyle, although well traveled, were more literary men, and Doyle was also a licensed physician. LeFanu does not shy from covering some of the more-difficult aspects of their lives,

such as Doyle's illicit affection for and rapid marriage to his second wife (after a minimal mourning period for his first). In the case of Kipling, LeFanu describes fully, but with dignity and compassion, the death of his six-year-old daughter and the permanent impact it left on the author.

The Boer War did not start well for the British, then went from bad to worse. Boer forces seized the initiative and inflicted powerful opening defeats on their enemies. But the British would not tolerate a victory by the Boers, especially one that left the latter with significant diamond mines and the world's largest gold reef. So reinforcements flowed from England; Doyle, Kingsley, and Kipling followed. Kipling was on a charitable mission: delivering care packages for British troops, especially the sick and wounded. He was a celebrity and was treated as such.

Doyle, as a professional medical man, took a more direct part in the conflict. Having volunteered, he was assigned as a doctor to the Royal Army Medical Corps at a field hospital. As much a well-known celebrity as Kipling, he was something of an occasional war tourist but diligently tended to the growing number of British troops in his care who had been struck down by diseases—which would kill far more of their companions than did Boer bullets. And death did come close to Doyle—typhus claimed at least one of his attendants.

Kingsley, freed from the responsibility of caring for her brother, went to South Africa expecting to be able to mount yet another journey of exploration after the war was over. But, as she had volunteered for nursing assignments, there were more-immediate duties; she was assigned to assist in nursing Boer prisoners. As was the case in most prisons and hospitals, disease was rampant—the

odds of catching a fatal illness were high. But Kingsley did her duty, even when she probably could have called in favors from friends and worked elsewhere. Eventually, she contracted typhus and died.

In addition to keen-eyed observation of her main subjects, LeFanu introduces and briefly examines other key players, such as General H. Herbert Kitchener and Roger D. Casement. Casement, an acquaintance of Kingsley, was instrumental in exposing the horrors of King Leopold's Congo Free State. Eventually, he was tried for treason for his role in the 1916 Easter Rising in Dublin and executed.

Something of Themselves is neither a standard biography nor a standard history. It depicts the Boer War—correctly—as a historical and political crossroads, one where passed three exceptional individuals of their day. Told with compassion and accuracy, it provides a deeper understanding of Kingsley, Kipling, and Doyle and of the time in which they lived. It is a worthy read as a stand-alone work, and a welcome addition to any collection devoted to the study of war or any of LeFanu's three subjects.

RICHARD NORTON



2030: How Today's Biggest Trends Will Collide and Reshape the Future of Everything, by Mauro F. Guillén. New York: St. Martin's, 2020. 278 pages. \$28.99.

Mauro F. Guillén's latest book, *2030: How Today's Biggest Trends Will Collide and Reshape the Future of Everything*, is a powerful reminder of how the world is changing demographically and economically as the result of technological innovations that will rewrite the Western-centric framework to which many Americans are accustomed. The trends

will reach critical mass within the next decade, making Guillén's well-written analysis a timely wake-up call to direct our attention to a new world order.

Guillén suggests that in the past, Western cultures compartmentalized the world in a linear way, thinking about trends—regarding new generations of people, having fewer children, urban lifestyles, and technology—separately. This approach blinds us to the new nature of reality. To put it colloquially, so much of the world is changing that when we focus on the trees we miss the forest. Guillén is not the first to point out how global change will challenge Western perceptions of the world. Many of the transformations he references began over the past decade. What is novel is his holistic review of the data and a shift away from linear thinking toward a "peripheral vision."

For twenty-five years, Guillén was on the faculty at the Wharton School, where he earned multiple teaching awards; recently, he became director of the Cambridge Judge Business School and a fellow of Queen's College at the University of Cambridge. He divides *2030* into eight chapters, each of which focuses on a segment of demographics, from population growth to the reality of a population living longer—and therefore more concentrated in the over-fifty bracket—along with the shift toward a world in which women will hold 55 percent of global wealth.

The introduction to *2030* places the reader ten years in the future. It depicts a warmer average temperature, using vignettes of Rehema, a woman from Nairobi who lives in Britain, and Angel, a woman originally from the Philippines living in Los Angeles. Angel reads newspaper headlines indicating that

American women have overtaken men in terms of their percentage of wealth ownership, while older Americans are “under the care of robots for their basic needs, [and] are renting out spare rooms in their homes to make ends meet, especially since their pensions are no longer providing the financial safety net they expected” (p. 2).

These images underscore the growing importance of Asia and Africa, which, according to UN projections, will remain the most populous areas on the planet, with 4.6 and 1.68 billion people, respectively. The chapter titled “Imagine No Possessions” pulls the intellectual rug out from under standard conceptions of wealth and traditional notions of property, exemplified in capitalistic ventures such as Uber and Airbnb, while China leads a shift to a cashless society that the rest of the world is sure to follow.

Guillén also dispels myths that are ubiquitous in America, such as that immigrants steal jobs, when the reality is that 23 percent of firms in high-tech industries are founded by immigrants; the numbers are 40 percent in California, 42 percent in Massachusetts, and 45 percent in New Jersey (p. 33). Another important fact is that even many illegal immigrants pay Social Security payroll taxes—an estimated \$13 billion as of 2016 (pp. 36–37). The media and popular culture often overlook this reality, focusing on the jobs immigrants do take and the services they use. A new world dominated by Asia and Africa will demand a new way of thinking, because much of the world will be growing older, while these regions will have younger, robust populations.

Chapter 3 is a thought-provoking review of the growing middle class, aptly titled “Keeping Up with the Singhs and the

Wangs.” The world is changing quickly, and our notion of “the West and the rest” is no longer valid. The fact is, 85 percent of the world fits neatly inside the “developed world” box, while 6 percent represents the developing world, and 9 percent falls somewhere in between. This growing middle class largely will reside in Asia and Africa, and its numbers will hit a staggering 4.9 billion people by 2030. An example from India captures a distinguishing characteristic of the new demographic. In 2009, India’s Tata Motors produced a car available for the equivalent of two thousand dollars, supposedly offering a quality-of-life improvement to many Indians; yet the car was a bust. Why? It seems that even Indians who were still merely aspirational were embarrassed to be seen driving “the world’s cheapest car.” Understanding these emerging middle-class consumers in Asia and Africa will present challenges to retailers accustomed to the preferences of U.S. and European markets.

Guillén is a gifted writer, and the numbers he cites paint an intellectually staggering picture. It is an understatement to claim that the book is a must-read for everyone seeking to grasp truly the significance of the next decade and how the individual will be transformed by the world around him or her. Reading this book will prepare everyone better for the reality of a world that soon will resemble little the one from their childhoods. The book is a unique contribution to the globalization discourse and especially important for the international-relations specialists, sociologists, military practitioners, and national-security experts who will be forced to resolve complex policy issues over the next few decades.

GERALD J. KRIEGER

OUR REVIEWERS

Tristan Abbey is president of Comarus Analytics, Washington, DC. Previously he served as a senior policy adviser to the Senate Committee on Energy and Natural Resources and as director for strategic planning at the National Security Council.

Benjamin Armstrong is a lieutenant commander in the U.S. Navy, serves as associate chair of the Naval Academy's History Department in Annapolis, Maryland, and is editor of the U.S. Naval Institute's 21st Century Foundations series.

Kurt Buckendorf is a commander in the U.S. Navy and a military faculty member in the Strategy and Policy Department of the Naval War College (the College), but currently is on a one-year assignment to the Fifth Fleet staff as the deputy chief of plans.

Scott Cauble, Commander, USN, is a chaplain assigned to U.S. Pacific Fleet, where he serves as the religious and cultural planner.

Timothy J. Demy, PhD, is a professor of military ethics at the College in Newport, Rhode Island.

Ryan C. Hendrickson, PhD, serves as L. M. Hamand Dean of the Graduate School and vice-provost for sponsored research and professor of political science at Eastern Illinois University, Charleston, Illinois.

Gerald J. Krieger, Colonel, USA, serves as an associate dean with the Near East South Asia Center, National Defense University, Washington, DC.

Richard Norton, PhD, is a retired USN officer and a professor of national-security affairs at the College.

Nick Omichinski holds an MA in global security from Arizona State University's School of Politics and Global Studies, Tempe, Arizona.

Jeffrey P. Rogg is a historian and assistant professor of intelligence and security studies at The Citadel, Charleston, South Carolina.

John W. Strain is a military adviser to the Saudi Arabia National Defense University's Joint Staff College in Riyadh. He is a 2018 graduate of the College.

REFLECTIONS ON READING

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

The purpose of the Chief of Naval Operations Professional Reading Program (CNO-PRP) is to encourage sailors of all ranks and specialties to use professional reading as a tool for personal and professional growth. This is the fifty-second article in the Reflections on Reading series for the *Naval War College Review*, and in virtually every one of those articles we have highlighted specific books or addressed larger issues related to professional development in the maritime services. In this installment, we will suggest that you do something you may find difficult or unappealing: *reading something you don't want to read!* We are including books, magazines, newspapers, and Internet websites within the scope of this discussion. Let me explain what we are suggesting.

The United Nations estimates that 2.2 million books are published globally each year, and 1,279 daily newspapers and 7,357 magazines are published regularly in the United States. As for electronic forms of information distribution, there are 1.7 billion websites available worldwide. Information is available at rates and through means that were unimaginable only fifty years ago. By some measures, this abundance of information creates a higher level of knowledge among readers, which can be a good thing.

A more critical view, however, suggests that the overwhelming volume of data creates an information overload that forces readers to pick and choose which portions of the “data buffet” they will consume. Research on reading habits has shown that readers tend to seek out sources of information that reinforce their preconceived notions, an effect known as *confirmation bias*: accepting only evidence that confirms what someone already believes. Tom Nichols’s widely read—and hotly debated—book *The Death of Expertise: The Campaign against Established Knowledge and Why It Matters* dedicates a full chapter to his notion that “unlimited information is making us dumber.”

How should we improve the “informational diet” we consume each day? Nichols notes: “For nearly thirty years, I’ve opened almost every class I teach

at the college and graduate level by telling my students that no matter what else they do, they should consume a balanced daily diet of news. I tell them to follow the major newspapers; to watch at least two networks; [and] to subscribe (online or otherwise) to at least one journal with which they consistently disagree.” The CNO-PRP does not recommend any specific newspapers, magazines, or broadcast outlets, but its managers maintain that readers should choose information sources that span a wide spectrum of opinions.

The current version of the CNO-PRP features seventy-four books, many of which deal with issues related to warfare, leadership, and strategy, and I suspect that many sailors naturally will seek books from within these genres. However, in the opening paragraphs we challenged you to seek out *other* books: those that address topics with which you are less comfortable. The list includes books about sexual, racial, and ethnological subjects that, for many sailors, fall outside their “mainstream.” All readers should feel empowered to read such books to understand the issues better and ensure they are equipped to share the privilege of maritime service with crewmates and teammates who subscribe to practices and beliefs that may be at odds with those of the majority.

Navy policy states as follows: “No matter your background, lifestyle, gender, sexuality, or religious beliefs, there is a place for you in the Navy. Here, all are welcome and have a part to play. We believe that when a diverse group of individuals come together to do a job, they can do it better because of their differences.” And the Secretary of Defense defines the overarching intent of the Department of Defense as follows: “The Department will lead with our values, building diversity, equity, and inclusion into all aspects of our work and in everything we do.” In the final analysis, the Navy’s focus is on deterring wars if possible and winning wars when necessary. A diverse and inclusive naval force will execute the Navy’s mission, which is “to recruit, train, equip, and organize to deliver combat-ready forces to win conflicts and wars while maintaining security and deterrence through sustained forward presence. We are an integrated Naval force that will provide maritime dominance for the Nation.”

The motto of the CNO-PRP is Read Well to Lead Well. As part of reading well, all of us should read (in hard copy, digital, and other forms) materials that *challenge* our assumptions instead of simply and blindly confirming them. You could summarize this notion as “read to learn, not to confirm”!

JOHN E. JACKSON

