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NAVAL WAR COLLEGE REVIEW

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Cover

A Chinese amphibious transport ship leaves port in the Netherlands in January 2015. In "Surging Second Sea Force: China's Maritime Law-Enforcement Forces, Capabilities, and Future in the Gray Zone and Beyond," Andrew Erickson, Joshua Hickey, and Henry Holst analyze the growth of China's sea services and the coordination between the gray hulls of the PLA Navy and the white hulls of the China Coast Guard as together they work to enhance China's maritime law-enforcement activities throughout the western Pacific.

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As China’s sea services continue to expand, the consolidating China Coast Guard (CCG) has taken the lead as one of the premier sea forces in the region—giving China, in essence, a second navy. With 1,275 hulls and counting, the CCG carries out the maritime law-enforcement activities that dominate the South China Sea as the People’s Republic exerts its claims and postures for dominance.

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In the most likely scenario, a high-intensity conflict between the United States and China would be confined to conventional weapons, owing to Beijing’s desire to avoid nuclear escalation. To protect the global security order and the tenuous balance of power on the world stage, the United States and its allies must craft a strategy to deny China this conventional first-strike option.

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FROM THE EDITORS

The challenge of the People's Republic of China to American interests and global order continues to focus the attention not only of American policy makers but of friends and allies as well. In "Surging Second Sea Force: China's Maritime Law-Enforcement Forces, Capabilities, and Future in the Gray Zone and Beyond," Andrew S. Erickson, Joshua Hickey, and Henry Holst provide a comprehensive overview and audit of the newly consolidated China Coast Guard and its role as a powerful adjunct of the People's Liberation Army Navy and instrument for maintaining and extending Chinese control of its home waters. This study employs the rigorous methodology using multiple Chinese-language sources developed in recent years by the Naval War College's China Maritime Studies Institute, in which Andrew S. Erickson is a research professor. Joshua Hickey is a senior analyst for the Department of the Navy; Henry Holst consults for a private defense firm.

In "U.S. Conventional Access Strategy: Denying China a Conventional First-Strike Capability," Sam Goldsmith provides a broader analysis of the implications of China's growing conventional challenge to the U.S. presence in the western Pacific and what the United States should be doing to deter a potential first strike against American forces and bases in the region. Of particular interest are his suggestions concerning the role of Australia in supporting the appropriate U.S. strategy. Sam Goldsmith is a defense consultant and a PhD candidate at the Royal Melbourne Institute of Technology.

The last several years have seen a dramatic increase of interest in wargaming throughout the Department of Defense, including the Department of the Navy. At the Naval War College, it is fair to say, wargaming has achieved unparalleled levels of sophistication and rising demand from its extensive customer base. But wargaming also has important applications outside the military sphere. As Shay Hershkovitz shows in "Wargame Business: Wargames in Military and Corporate Settings," gaming can be used in a variety of ways in business settings to improve a corporation's understanding of its strategic environment and how to cope with sudden changes in it, as he illustrates with reference to three such exercises recently conducted with business organizations in Israel. Shay Hershkovitz is a former senior intelligence official in the Israel Defense Forces.

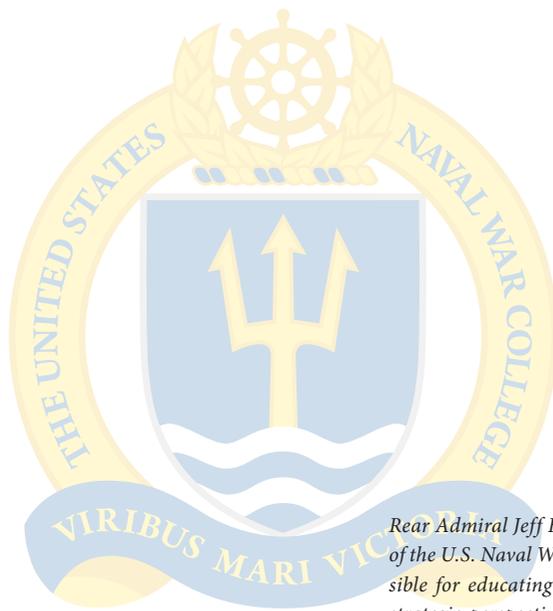
In "Peacetime Naval Rearmament, 1933–39: Lessons for Today," Jamie McGrath revisits a salient but forgotten chapter in the history of America's navy:

the long period of rebuilding of U.S. naval forces and shipbuilding capabilities initiated and overseen by President Franklin D. Roosevelt in close collaboration with Congress, in particular Representative Carl Vinson. This effort was vital to the nation's ability to expand its navy rapidly in response to the requirements of war against Japan when that materialized in 1941. McGrath draws particular attention to the need for a deliberate nurturing of the naval defense industrial base of the kind that occurred in the 1930s, pointing out that China today is in a much better position than the United States to ramp up naval construction quickly, owing to its very extensive commercial shipyard capability. Captain Jamie McGrath, USN, is a professor in the department of Joint Military Operations at the Naval War College.

Finally, in “Running Silent and Algorithmic: The U.S. Navy Strategic Vision in 2019,” Sam J. Tangredi performs a commendable service by reviewing the current state of play of Navy strategy documents and their relationship to broader Department of Defense strategy and guidance statements of recent years. He carefully analyzes the tensions and seams among these various documents and the degree to which each remains authoritative within the Navy, and provides his own synthesis of the Navy's strategic vision going forward. He calls particular attention to the extent to which the “ideology of jointness” has provided significant obstacles to the coherence of such a vision. Captain Sam Tangredi, USN (Ret.), is the director of the recently established Institute for Future Warfare Studies at the Naval War College.

IF YOU VISIT US

Our editorial offices are located in Sims Hall, in the Naval War College Coasters Harbor Island complex, on the third floor, west wing (rooms W309, 330, 333, 334, 335). For building-security reasons, it would be necessary to meet you at the main entrance and escort you to our suite—give us a call ahead of time (401-841-2236).



Rear Admiral Jeff Harley is the fifty-sixth President of the U.S. Naval War College. The College is responsible for educating future leaders, developing their strategic perspective and critical thinking, and enhancing their capability to advise senior leaders and policy makers.

Admiral Harley is a career surface warfare officer whose sea-duty assignments have included command of USS Milius (DDG 69), Destroyer Squadron 9, and Amphibious Force Seventh Fleet / Expeditionary Strike Group 7 / Task Force 76. During his command of Milius, the ship participated in combat operations supporting Operation IRAQI FREEDOM and his crew won the Battle Efficiency Award and the Marjorie Sterrett Battleship Fund Award for overall combat readiness.

Admiral Harley attended the University of Minnesota, graduating with a bachelor of arts in political science, and received master of arts degrees from the Naval War College and the Fletcher School of Law and Diplomacy, Tufts University. Additionally, he served as a military fellow at the Council on Foreign Relations in New York City.

PRESIDENT'S FORUM



Global Reach, Global Engagement, and Global Impact

AS IT HAS BEEN SINCE ITS INCEPTION, the Naval War College's primary mission is to educate and develop future leaders. Our talented and highly motivated graduates complete their studies in Newport and then go on to serve in demanding positions in our military services, in those of our allies, and throughout the government's national security sector. In these positions they apply the critical-thinking skill sets that were refined and honed at this great institution. Their close interaction with our extraordinary faculty and staff sparks a desire for lifelong learning that continues to pay dividends for our students both as national security practitioners and as informed and engaged citizens.

At the end of the day, the greatest resource the College provides to our services, agencies, and nations is our alumni! In important assignments around the globe, they are often the critical voices that make the arguments that carry the day. In commands and organizations large and small, they provide a foundation of ethical decision-making in the complex, dynamic, and volatile world in which we live. There is no better case study on the value of networks and interpersonal relationships than the one demonstrated by our extraordinary alumni.

While the majority of our alumni are from the United States, we recognize that the Naval War College is a major player on a global scale. Our *global reach* is reflected in the fact that we are honored to claim more than 4,700 international graduates, representing 137 nations. The record of success for these international alumni is remarkable, with nearly half of all Naval Command College graduates having attained flag or general officer rank, and nearly a quarter of these alumni having become Chiefs of their Services.

Our *global engagement* efforts seek to maintain a robust alumni network that can enhance graduate effectiveness in the international environment. We constantly hear from our graduates, who express praise for the way in which their College experiences enhance their effectiveness in maintaining global maritime partnerships. We continue to strengthen these partnerships through our aggressive Regional Alumni Symposium series of academic conferences. They are designed to encourage professional interaction among like-minded military leaders and allow our graduates to foster the “Newport connection” across graduating classes and generations.

Regional Alumni Symposia are co-hosted by the President of the College and a regional partner navy. Participation is open to all international and U.S. graduates of the College. Past Regional Alumni Symposia have taken place around the globe, including in Brazil, Germany, Peru, the Philippines, Oman, and Malaysia, and on our home campus in Newport, Rhode Island. The College’s seventeenth annual Regional Alumni Symposium will be held in Bergen, Norway, in April 2019, co-sponsored by the Royal Norwegian Navy. The symposium will explore a wide range of topics under the overarching theme of “Challenges in Arctic and Cyber Security.”

Symposia routinely include keynote speeches by prominent military leaders and faculty-led panels addressing current strategic and operational issues. All participants are encouraged to exchange their insights and perspectives. Such networking develops professional linkages among military officers at critical junctures in their careers when international relationships prove invaluable.

These events validate the value of partners and friends in a world where you can surge ships and other assets rapidly to the scene of confrontation, but you cannot surge trust—a commodity that must be nurtured across many years. As former U.S. Chief of Naval Operations and founder of our modern international education programs Admiral Arleigh A. Burke wrote: “Most important among navies or among nations is friends.”

Over the past two years, we have revitalized our alumni programs with an aim to strengthen relationships through real-time alumni-to-alumni engagement by hosting in-person events such as Regional Alumni Symposia, as well as through a significant expansion of our online networks and learning opportunities. You can learn about, and participate in, our alumni programs at myUSNWC.com, or on Facebook at facebook.com/USNWCAlumni, or on LinkedIn at linkedin.com/school/usnwc.

Finally, we trust that you will continue to leverage all aspects of our alumni network and use them as unmatched resources for professional development in war fighting, naval and joint operations, and maritime policy. Together, we will

have *global impact* as we build trust and confidence among our graduates and continue our ongoing efforts to operationalize and internationalize your U.S. Naval War College.

JEFFREY A. HARLEY

Rear Admiral, U.S. Navy

President, U.S. Naval War College

Dr. Andrew S. Erickson is a professor of strategy in the China Maritime Studies Institute and the recipient of the inaugural Civilian Faculty Research Excellence Award at the Naval War College. He serves on the editorial board of the Naval War College Review and is an associate in research at Harvard University's John King Fairbank Center for Chinese Studies. In 2013, while deployed in the Pacific as a Regional Security Education Program scholar aboard USS Nimitz, he delivered twenty-five hours of presentations. Erickson is the author of Chinese Anti-ship Ballistic Missile Development (Jamestown Foundation / Brookings Institution, 2013).

Joshua Hickey is a senior analyst for the Department of the Navy, with over fifteen years of direct subject-matter experience.

Henry Holst is a consultant for Deloitte.

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SURGING SECOND SEA FORCE

China's Maritime Law-Enforcement Forces, Capabilities, and Future in the Gray Zone and Beyond

Andrew S. Erickson, Joshua Hickey, and Henry Holst

China's armed forces are divided into three major organizations, each of which has a maritime subcomponent. The gray-hulled People's Liberation Army Navy (PLAN) claims a growing portion of the PLA's personnel and resources; the People's Armed Police (PAP) leads, and increasingly reflects the paramilitary character of, China's white-hulled maritime law-enforcement (MLE) forces, including the China Coast Guard (CCG); and the militia contains a growing proportion of sea-based units, the blue-hulled, PLA-controlled People's Armed Forces Maritime Militia (PAFMM). Each of China's three sea services is the world's largest in terms of ship numbers. Unlike America's military-focused shipbuilding industry, China's massive commercial shipbuilding industry subsidizes overhead costs for construction of all three sea forces' vessels. That explains in part how China has been able to build and modernize all three services so expeditiously, none more rapidly than its second sea force, centered on the consolidating CCG. Using a platform-based approach that spans ongoing organizational changes, complexity, and overlap, this article assesses these vessels, their order of battle, and their capabilities, as well as likely future trends and implications.¹

Over the past decade-plus, China has undertaken a massive MLE modernization program that has increased greatly its capability to operate MLE vessels in remote areas. A key contributor to near-seas maritime operations to further disputed sovereignty claims in the "gray zone" between peace and war, these CCG-centered MLE forces afford Beijing increasing influence over the regional maritime situation without the direct use of PLAN warships, demonstrating power while reducing the risk of escalation and allowing the PLAN to focus on other, more "naval" missions farther afield.²

This build-out has yielded Beijing a formidable “second navy.”³ Today China boasts not only the world’s largest navy but also the world’s largest maritime law-enforcement fleet—by a sizable margin. As of 2017, China’s 17,000-plus CCG personnel crewed 225 ships of over five hundred tons capable of operating offshore, and at least another 1,050 vessels confined to closer waters, for a total of over 1,275—more hulls than the coast guards of all its regional neighbors combined.⁴ At more than ten thousand tons full load each, its two Zhaotou-class patrol ships are the world’s largest MLE ships.

China is applying lessons learned from the U.S. and Japanese coast guards as well as indigenous experience, including the incorporation of new ship features such as helicopters, interceptor boats, deck guns, and high-capacity water cannon. Most recently constructed CCG ships now have high-output water cannon mounted high on their superstructures. The 2014 *Haiyang Shiyou* (HYSY) 981 oil rig standoff demonstrated their ability to inflict damage by breaking pilothouse windows, damaging bridge-mounted equipment, forcing water down exhaust funnels, and breaking bones of crewmembers on Vietnamese vessels. Many new CCG ships have quick-launch boat ramps astern, allowing for rapid deployment of interceptor boats.

China’s MLE buildup is slowing, but far from over; in 2020, China’s coast guard is expected to have 260 ships capable of operating offshore.⁵ Many are capable of operating anywhere in the world.⁶ Numbers of small craft are not expected to change significantly; we estimate that the CCG will continue to own at least another 1,050 smaller vessels confined to closer waters, for a total of more than 1,300 hulls. From 2005 to 2020, this represents overall a fifteen-year net increase of four hundred total coast guard ships, among them 202 additional ships capable

TABLE 1
CHINA COAST GUARD FORCE LEVELS (2005–20)

Type (tonnage)	2005	2010	2017	2020	15-Year Net Increase
Oceangoing patrol ships (2,500–10,000)	3	5	55	60	+57
Regional patrol ships (1,000–2,499)	25	30	70	80	+55
Regional patrol combatants (500–999)	30	65	100	120	+90
<i>Subtotal: Ships that can operate offshore</i>	58	100	225	260	+202 (+350%)
Coastal patrol craft (100–499)	350	400	450	450	+100 (approx.)
Inshore patrol boats / minor craft (<100)*	500+	500+	600+	600+	+100 (approx.)
Total: All China Coast Guard	900+	1,000+	1,275+	1,300+	+400 (approx.)

Note:

* There are forty-ton interceptor boats stationed on at least one (probably all) of China’s offshore islands. With forward basing available in the South China Sea disputed areas, size is less relevant than it was previously.

of operating offshore, representing 350 percent growth in that category. As table 1 indicates, all types of CCG ships have increased in numbers, with the most significant force-level increases, proportionately, occurring in oceangoing patrol ships (those over 2,500 tons).

FOUNDATION

China's MLE modernization program has proceeded in three major phases, the latter two of which overlap. Phase 1 (2000–10) focused on modest, dual-role research and patrol ships. These were relatively small (mostly 1,000–1,750 tons, with several larger ships) and generally unarmed. Only a few had helicopter facilities. Phase 2 (2010–17) yielded dozens of new purpose-built offshore patrol ships. Much larger than phase 1 vessels (three thousand to ten thousand tons full load), these ships featured improved sea keeping and endurance, as well as more-advanced (military-style) electronic systems. Internet photographs indicate that all CCG ships built within the last five years have a datalink antenna (such as the HN-900), similar to those on PLAN vessels and to the U.S. Navy's Link 11; older CCG ships now are being retrofitted with such antennae. Most vessels have helicopter decks, some with hangars. Some ships have high-pressure water cannon and ten-meter-long fast-interceptor boats with twin outboard engines enabling a thirty-five-knot top speed, well suited for dispatch to land features for local security operations. Most new ships built in phase 2 have 30 to 76 mm guns. Phase 3 (2014–18) backfilled with coastal law-enforcement units, primarily dozens of modern, capable, fast patrol combatants with guns, oriented toward traditional law-enforcement functions. Several medium-sized patrol ships were built to provide command and control.

In 2013, China consolidated four of its five major maritime law-enforcement agencies (the "five dragons") into a new agency called the CCG. The four dragons thus consolidated are the former State Oceanic Administration (SOA) and its subordinate China Marine Surveillance (CMS); the former Maritime Police and Border Control, previously administered by the Ministry of Public Security; the former Fisheries Law Enforcement (FLE), previously administered by the Ministry of Agriculture; and the former Maritime Anti-smuggling Police, previously administered by the General Administration of Customs (GAC). Only one major MLE agency remains independent of the CCG: the Maritime Safety Administration (MSA). Another non-CCG organization, China Rescue and Salvage (CRS), plays a supporting non-MLE role. The latter two will be discussed briefly just before the conclusion of the article.

More than twenty naval and commercial shipyards have produced CCG vessels over the past decade. With overhead costs reduced by a strong commercial shipbuilding industry, construction of coast guard and other MLE vessels is both

cheap and efficient. Use of commercial, off-the-shelf drivetrains and electronics, combined with a lack of complex combat systems, facilitates rapid assembly, with multiple units built simultaneously. According to contract and media details, typical total construction time (from start to commissioning) is twelve to eighteen months for a large (over one thousand tons) patrol ship (designated WPS) and nine to twelve months for a smaller (under one thousand tons) patrol craft (WPC) or patrol combatant (WPG).

By 1999, China had made a national-level decision to start expanding and modernizing its MLE agencies.⁷ The majority of the shipbuilding budget was

Unlike America's military-focused shipbuilding industry, China's massive commercial shipbuilding industry subsidizes overhead costs for construction of all three sea forces' vessels. . . . China has been able to build and modernize all three . . . expeditiously, none more rapidly than . . . the consolidating China Coast Guard.

allocated to the organization then known as CMS, primarily responsible for enforcing Chinese maritime territorial claims and conducting off-shore law enforcement.⁸ Prior to the turn of the century, the CMS force consisted primarily of a limited number of 1970s-built dual-use patrol

and research ships, most of which were relatively small and intended for operations in near-coastal areas. None of these ships was configured specifically for law-enforcement duties, as no guns, helicopters, fast-interceptor boats, water cannon, or other MLE equipment was fitted.⁹

Initially, the CMS ship-modernization program focused on the acquisition of dual-use ships of several sizes that could perform patrol and surveillance duties, as well as limited research and survey activities. This initial acquisition program began in earnest in 2004, with most new ships launched and commissioned by the end of 2005. CMS received three Shuyou-class "1,000-ton" patrol ships (1,428 tons full load), three Shuwu-class "1,500-ton" patrol ships (1,740 tons full load), and the first Shucha I "3,000-ton" patrol ship (4,000 tons full load), which were distributed relatively evenly among the three CMS branches (North, East, and South). Typical of earlier dual-use patrol ships (known colloquially as "WAGORS"), all three classes were fitted with stern A-frames and cranes to enable them to handle hydrographic and oceanographic research equipment, although few ever have been seen performing such roles.¹⁰ Significantly, the Shucha I class was fitted with a helicopter landing deck and hangar facilities—not previously fitted to any CMS ships—giving the first indication that CMS intended to perform offshore missions requiring helicopter support. However, in keeping with the missions of SOA and CMS—stated publicly as being primarily

scientific—none of these new ships was armed with any permanent weapons.¹¹ Central to the CMS ship buildup was the thirty-six-hull program that began in 2010. Supplied to provincial and municipal MLE organizations, these ships displaced six hundred to 1,500 tons.

China's other maritime law-enforcement agencies, which historically only had limited offshore roles and capabilities, began to acquire a small number of ships capable of operating offshore. By 2007, the PAP Maritime Police acquired its first large patrol ship, the Haixun II class's solitary vessel, *Zhong Guo Hai Jing 1001* (now known as *Hai Jing 31101*). Historically, the PAP Maritime Police had operated only small, fast, heavily armed patrol craft in support of its primary responsibilities of border defense, antismuggling efforts, and immigration enforcement (as well as regime security). *Hai Jing 31101* was equipped with a 37 mm main gun and a helicopter deck. It had more than four times the displacement of most PAP Maritime Police patrol craft, and its restricted initial operations revealed the PAP Maritime Police's discomfort with operating larger ships; most PAP Maritime Police patrol craft crewmen were drawn from land-based defense forces rather than maritime backgrounds. The PAP thus had difficulty adapting to the twenty-four-hour cycle of activity that is required when a ship goes out for days or weeks at a time; this was not part of its organizational culture.¹² For most of its early career, *Hai Jing 31101* rarely ventured beyond coastal waters. It was seen largely as a ceremonial "status" platform for the PAP Maritime Police, although in recent years under the CCG it has played a slightly more active offshore role.

The Bureau of Fisheries oversaw China Fisheries Law Enforcement, which already operated several dozen aging offshore patrol ships used for resource protection and fisheries enforcement. FLE began its own modest modernization program in the first few years of the new century. This consisted mostly of introducing new coastal patrol craft classes, but culminated in the construction of the then-impressive Zhongyang-class patrol ship *Zhong Guo Yu Zheng 310*, which was launched in 2010.¹³ As with other MLE agencies' recent acquisitions, FLE chose to equip WPS 310 with a helicopter deck and hangar—even though FLE did not actually own any helicopters. In its initial years, FLE used WPS 310 extensively for offshore patrol duties, and in later years the ship would serve as a proof of concept for at least one follow-on class that now forms the backbone of the FLE fleet.

Early in the first decade of the twenty-first century, the fourth major maritime law-enforcement agency, GAC, had just finished building over thirty new two-hundred-ton patrol craft (of the Hailin I and II classes) for coastal countersmuggling operations. It did not have a significant ship-construction program ongoing after about 2003.

MSA continued its own construction program, acquiring a variety of ships to fulfill its specialized missions, ranging across buoy tending, environmental cleanup, search and rescue, light maritime towing and salvage, and port operations. MSA also acquired several large patrol ships that were able to respond to offshore maritime disasters and emergencies and interact with major coast guard organizations from other Pacific countries. MSA was the first of the five dragons to obtain purpose-built patrol ships large enough for transoceanic operations, with the two Shubian-class ships attending joint exercises in Hawaii and other distant locales. Unlike China's other MLE agencies, MSA consistently has maintained a close working relationship with the U.S. Coast Guard, the Japan Coast Guard, and other regional MLE organizations.¹⁴ Unlike the other dragons, MSA historically has acquired a large portion of its funding from collection of port fees from commercial shipping, allowing it some degree of budget autonomy and insulation from the country's leadership and national budget issues.¹⁵

MOVING FORWARD: CHINA'S NEW COAST GUARD

As previously noted, 2013 saw the integration (at least on paper) of four of these agencies into a new agency called the China Coast Guard. This reform had been anticipated for several years by the individual agencies, several of which apparently began aggressive construction programs after 2010, perhaps in an attempt to assert dominance within the new organization's command structure.¹⁶ There was little cooperation, with each organization (particularly FLE and CMS) apparently focusing on its own ship designs.

Shortly before CCG integration, the CMS force also acquired several auxiliary ships that recently had been retired from PLAN service. These transfers likely were intended to fill gaps in patrol capabilities as China began to pursue maritime expansion more assertively in the South and East China Seas. The vessels included three former intelligence-collection ships (the icebreaking Yanbing-class former AGI 723, the *Xiang Yang Hong* 9-class former AGI 852, and the Haiyang-class former AGI 411), as well as a few other old PLAN auxiliaries, including a converted cable layer, a minelayer, and three large ocean salvage tugs. The former PLAN ships were pressed into service immediately (largely without naval guns and electronics), while the ship-construction program of CMS—a leading component of the soon-to-be CCG—proceeded.¹⁷

One hallmark of CCG modernization in recent years has been the clear specialization of ships and craft toward particular missions, an outcome of procurement programs initiated in the era of the five dragons.¹⁸ Moreover, China's massive shipbuilding industry (and, presumably, shipbuilding budget) has allowed the CCG to focus on a variety of designs oriented toward specific requirements, rather than building jack-of-all-trades ships that were more flexible but less

capable of specific functions. However, all these ships and craft remain highly capable of acting in other roles, particularly those related to promoting sovereignty in disputed South and East China Sea areas.

A second hallmark of CCG modernization is a preference for evolutionary design modifications. Since 2010, various initial designs have been followed by frequent revisions in configurations and capabilities. For instance, China has made four sequential variations of its “regional thousand-ton” patrol-ship design since the program started almost a decade ago. The original variant (the Shuyou class) was essentially a dual-purpose research and patrol ship for CMS. It was equipped with A-frames and cranes at the fantail to accommodate survey activities. As the design progressed to the Shuke I, II, and III classes, the ships clearly evolved toward a law-enforcement role, with cranes and A-frames removed; davits for small, fast boats added; and hull and superstructure modifications made to allow them to handle open-water operations better.

Similar upgrades have been made in other classes. These changes were both a result of close observation of other modern MLE ships (primarily those operated by the U.S. Coast Guard and Japan Coast Guard) and lessons learned by CMS, FLE, and other CCG agency ships operating farther offshore for longer periods.

MARITIME CUSTOMS AND ANTISMUGGLING

The segment of the CCG that performs maritime customs enforcement (formerly GAC) has been active in acquisitions in recent years, replacing most of its 1980s/1990s-built fleet of small patrol craft with three new classes of ships intended specifically for maritime law-enforcement and customs duties. The new Zhaogao-class patrol ship, of which three were built, gives the CCG additional capability for exclusive economic zone (EEZ) patrol activities, such as intercepting smugglers farther offshore. The 1,750-ton ship is 308 feet long and thirty-nine feet in beam. Unlike most CCG patrol ships, which have maximum speeds of just over twenty knots, the Zhaogao design has four powerful diesel engines that likely allow it to reach top speeds of nearly thirty knots, with a range of five thousand nautical miles (nm) at fifteen knots.¹⁹ These ships also are equipped with two quick-launch davits for fast-interceptor boats that can be deployed while under way. The ships are fitted with a 30 mm automatic main gun and a helicopter deck.

A second specialty class, the Hutao I patrol combatant, is configured for extended patrols deep into China’s EEZ. Like the Zhaogao, the Hutao I is fitted with four diesels providing a full-power speed of over thirty knots via four shafts and propellers, and a range of five thousand nautical miles at fifteen knots. The 625-ton Hutao I measures 223 feet long and 28.5 feet in beam. It has dual quick-launch stern ramps, allowing it to launch and recover fast-interceptor boats while under way, and is armed with a single 30 mm gun, two smaller guns, and water

TABLE 2
CHINA COAST GUARD MARITIME CUSTOMS: NOTABLE CLASSES

Class	Number in Country	Known Pennant Numbers	Length (feet)	Displacement (tons)	Guns (millimeters)
Zhaogao WPS	3	(Hai Jing) 33103 (Zhejiang), 44104 (Guangdong), 46014 (Hainan)	308	1,750	30
Hutao I WPG	8 (3+ new units)	(Hai Jing) 31101, 31103, 33104, 35104, 44105, 44106, 45103 + more	223	625	30
Hutao III WPG	2	44109, 44110	223	625	30
Haihei WPC	2	(Hai Guan) 905 + another	205	450	37
Haifeng WPC	5	(Hai Guan) 900–904	190	440	14.5
Hulai II WPC	15 (+ new units)	(Hai Jing) 33004, 35007, 37001, 44005, 44008, 44015–18, 44020, 44021, 45001, 45002, 46003 + more	177	330	14.5
Hailin I WPC	25+	(Hai Jing) 44059, 44068, 44069; (Hai Guan) 853–80 (pennant numbers probably changed)	170	230	23, 14.5
Hailin II WPC	10+	(Hai Jing) 21091, 31088, 33086, 35089; (Hai Guan) 881–90 (pennant numbers probably changed)	170	230	23
Type 611 WPC	~10	(Hai Jing) 33028; (Hai Guan) 823–30 (pennant numbers probably changed)	145	170	14.5
Haigao WPC	10+	(Hai Guan) 810–20 (pennant numbers probably changed)	140	100	14.5

Notes:

WPC = coast guard patrol craft; WPG = coast guard patrol gunboat; WPS = coast guard patrol ship.

The China Coast Guard overall has several hundred classes of ships; to keep this and subsequent tables manageable, only the most significant classes are included.

cannon. At least eight Hutao Is are operational already, and additional units continue to be built.

A third class, the Hulai II, is cosmetically similar to the ubiquitous Dutch Damen Stan Patrol 4207, a patrol craft operated by over a dozen navies and coast guards internationally. However, the Hulai II adds a third engine, once again giving it a top speed of over thirty knots, for missions inside China's EEZ, particularly maritime customs interdiction, and a range of 1,200 nm at eighteen knots. The 330-ton Hulai II is 177 feet long and twenty-four feet in beam, and also is

equipped with a fast-launch stern-ramp system, allowing it to deploy its interceptor boat while under way. It has small arms and a smoke grenade launcher, high-capacity water cannon, and reinforced hull rub rails. In recent years, variations of both the Huto I and the Hulai II designs have been sold to export customers (the latter to Pakistan), indicating that these are competitive, effective designs in a crowded international patrol craft market. Over a dozen Hulai IIs have been built in the last few years, and as many as thirty total units may be built to replace the CCG's older Type 611- and Hailin I/II-class patrol craft built in the 1980s and '90s.²⁰

LONG-RANGE FISHERIES ENFORCEMENT

Fisheries enforcement and other resource protection in furtherance of China's territorial claims always has been a primary mission of China's maritime agencies, specifically the former FLE. FLE's progressive integration into the CCG likely improved the budgetary situation for the former, which to execute its mission historically had relied on a jumble of older, less-capable patrol ships, a hodgepodge of patrol craft, and assorted converted fishing boats. Over the past decade the CCG's former Fisheries Enforcement Branch embarked on an active program to replace and modernize its entire fleet.

Most notable with regard to long-distance fisheries enforcement is the new Zhaoyu-class large patrol ship, of which a dozen were commissioned from 2014 to 2016. At 360 feet long and forty-six feet in beam, the 3,500-ton Zhaoyus have a traditional combatant-style hull optimized for long-distance cruising in heavy seas, as these ships are intended for operations well outside China's disputed maritime periphery—in theory, anywhere.²¹ This class has an estimated top speed of twenty-five knots, with a range of 7,500 nm at fourteen knots. Design modifications were based on lessons learned from FLE's former flagship, the one-off Zhongyang-class patrol ship *Zhong Guo Yu Zheng 310*, which recently was transferred to the Sansha City municipality. FLE likely identified some design and stability flaws in the ship, and subsequently improved the Zhaoyu configuration by reducing the superstructure by one deck (for roll stability) and adding a stern-launch boat ramp to deploy interceptor and boarding craft from beneath the helicopter deck. Additional fittings include a helicopter hangar and a substantial armament of one single 30 mm gun and four single automatic 12.7 mm guns.²²

New to this category is the Zhaochang patrol ship, purpose-built for long-distance fisheries enforcement with a new tumblehome hull design and a 30 mm gun.²³ The 3,500-ton ship is 360 feet long and forty-nine feet in beam. A proof of concept for the CCG's first ship with electric-drive propulsion, complete with diesel generators, the sole Zhaochang built to date yields a top speed of only twenty knots, but has a long range: ten thousand nautical miles at fifteen knots.

TABLE 3
CHINA COAST GUARD FISHERIES ENFORCEMENT ORDER OF BATTLE (SELECTED)

Class	Number in Country	Known Pennant Numbers	Length (feet)	Displacement (tons)	Gun(s) (millimeters)
Zhaochang WPS	1	(Hai Jing) 2301	360	3,500	30
Zhaoyu WPS	12	(Hai Jing) 1301–1304, 2302–2304, 3301–3305, 46305	360	3,500	30
Zhaotim WPS	14–15	(Hai Jing) 1102–1104, 3104–3106, 21115, 31115, 33115, 35115, 37115, 46115; (Yu Zheng) 45005, 45013, 45036	269	1,764	30
Dalang I WPS (ex-PLAN)	1	(Hai Jing) 3411	370	4,500	30
Zhongeng WPS	10+	(Yu Zheng) 13001, 32501, 33001, 33006, 35001, 37008, 44061, 45001, 46012 + more	180	~1,000	14.5
Zhongwen WPS	1	(Yu Zheng) 21103	195	850	unknown
Zhongke WPG	6+	(Yu Zheng) 21101, 21111, 27061, 33018, 33205, 45002 + possibly more	180	~500	unknown
Zhongem WPG	2	(Yu Zheng) 37361	190	550	14.5
Zhongtao WPC	50+	(Yu Zheng) 12002, 21006, 21009, 21137, 21202, 21401, 32511, 32521, 32528, 32543, 32545, 33012, 33015–19, 33023, 33025, 33129, 33316, 33416, 33417, 37001, 37005, 37015, 37529, 37601, 45012, 46013 + more	160–70	300–450	14.5
Zhongsui WPC	6	(Yu Zheng) 35199, 44601–603, 44606, 45003	165	~350	14.5
Duancude WPC	10+	(Yu Zheng) 21402, 31006, 37057, 37206, 37518 + more	130	~200	none
Nanhua Type A WPC	~10	(Yu Zheng) 44025, 44081, 44121, 44168; (Hai Jian) 9040, 9060 (additional units operated by China MSA and PLA MTS)	110	150	23
Zhongbong WPC	10+	(Yu Zheng) 13203, 13301, 32511, 37078, 37163, 37606, 37607	100–20	~150	none
Fisheries patrol trawlers	30+	(Yu Zheng) variety of designs and numbers	100–20	250–600	none, generally
Red Arrow WPB	50+	4-digit, ending in <i>H</i>	40	15	none

Notes:

MSA = Maritime Safety Administration; MTS = Maritime Transport Squadron (Army Logistics); PLA = People's Liberation Army; PLAN = People's Liberation Army Navy; WPB = coast guard patrol boat; WPC = coast guard patrol craft; WPG = coast guard patrol gunboat; WPS = coast guard patrol ship. The six classes at the bottom of the table (beginning with the Zhongsui WPC), while relatively small in tonnage, are deployable to Chinese-occupied features in the South China Sea, and may well be used thus.

For regional fisheries-enforcement operations—particularly in disputed fisheries areas adjacent to Vietnam (e.g., the Gulf of Tonkin), Japan, and the Koreas—the CCG built a large class of smaller patrol ships, the Zhaotim class. The fourteen or fifteen 269-foot-long, thirty-nine-foot-beam, 1,764-ton ships in this class are optimized for regional, medium-endurance patrols, with a reported 7,500-mile range at thirteen knots, an ice-strengthened hull (for operations in the northern Bo Hai [formerly known as the Gulf of Chihli]), a 30 mm gun, two small fast-interceptor boats, and a moderate towing capability to assist disabled fishing boats. With their regional, near-shore focus, Zhaotims lack helicopter facilities. The relatively beamy, low-slung hull design, with bulbous bow, indicates that sea keeping in heavy weather and efficiency were key design factors, rather than the high speed and maneuverability prioritized in other CCG ships intended for interdiction duties. (Fishing boats, typically low speed, cannot outrun even patrol ships whose top speed does not exceed twenty knots, such as the Zhaotim class.)

Provincial-level fisheries law-enforcement agencies also have undertaken a major modernization program. As late as the 1990s, PRC coastal fisheries enforcement predominantly was performed by converted fishing boats and various older patrol craft. However, in the last decade local forces have built about a dozen different designs of thirty-five-to-sixty-meter coastal patrol craft and combatants for more-local, short-endurance enforcement duties. Most notably, the fifty-meter, 450-ton Zhongtao class has been in constant production since the early years of this century, with over fifty units built at six shipyards to date.

All units share a common hull and basic superstructure design, but vary significantly in how they are fitted out topside, depending on operational location and typical weather conditions. For operational areas where assertive fishermen may use collisions and shouldering as a defense against enforcement (e.g., the Gulf of Tonkin), Zhongtao units have reinforced ribbing along the hulls. For operational areas with heavier sea conditions (e.g., the East China Sea), Zhongtao units may have raised bow bulwarks. Some units stationed in the Yellow Sea and Bo Hai may have ice-strengthened bows. Earlier units used small, davit-launched interceptor boats, while later units have a stern gate and quick-launch ramp. The Zhongtao class is yet another example of coast guard designers adapting and learning operational lessons when building new ships and patrol craft.

OFFSHORE SURVEILLANCE, PATROL, AND SOVEREIGNTY ENFORCEMENT

While the CCG in its entirety has a general role of performing offshore surveillance and patrol (particularly with its larger patrol ships), as well as border defense and territorial enforcement, historically these roles were played primarily by two former dragons: CMS and the PAP Maritime Police. CMS was primarily

responsible for offshore duties, with much of its force composed of larger ships capable of longer-endurance operations and dual hatted as oceanographic research ships.

As a component of the well-funded SOA, CMS substantially bolstered its new shipbuilding programs during and after the consolidation with orders for several new classes of large ships (most of which eventually were commissioned into the now-consolidated CCG). New CMS ships clearly were built with a primary role of open-seas, long-term patrol and surveillance duties, and were less equipped for law-enforcement interception, fisheries administration, oceanographic research,

CCG-centered MLE forces afford Beijing increasing influence over the regional maritime situation without the direct use of PLAN warships, demonstrating power while reducing the risk of escalation.

or safety of life at sea (SOLAS) roles than CCG ships built prior to 2012.²⁴

The most notable of the new ships built for the CCG in recent years were the two massive Zhaotou-class flag-

ships, one each based in the south and the east. The Zhaotous have received an inordinate amount of media attention owing to their great size: with a length of 165 meters (541 feet), a beam of more than twenty meters (over sixty-five feet), and a full load of more than ten thousand tons, their displacement is greater than that of modern naval destroyers. Their estimated speed is twenty-five knots, their range 15,000 nm.

However, the substantive rationale for construction of these ships is unclear, as they do not offer any technical advantages vis-à-vis other, smaller, patrol ships built recently for the CCG.²⁵ There are Internet rumors that the ships were ordered in direct response to Japan's deployment of its 9,500-ton *Shikishima*-class cutters to the Senkakus in 2013, which at the time dwarfed any ships in the CCG inventory, suggesting that construction of the Zhaotou class represents a point of pride for China—to have the world's largest coast guard ships—rather than an actual capability requirement. While that rationale is speculative at best, the Zhaotou design nonetheless does provide the CCG with a large platform that can operate anywhere in the world with maximum endurance, while carrying a helicopter and mounting a 76 mm main gun. It is unlikely that any additional units of this class will be built, however, owing to the ship's berthing requirements and the presumably higher cost of operations without any tangible benefit in capability compared with smaller CCG patrol ships.²⁶

Since consolidation, the CCG's three most effective new classes of large patrol ships have been the Shucha II, Shuoshi II, and Zhaolai classes, all of which are based on earlier classes that were operational before the CCG reform. The Shucha II, of which ten units are currently operational, is based on the Shucha I design

originally built for CMS early in the new century. When built, the Shucha I was the most modern ship in the CMS inventory, combining long-distance endurance with a substantial ability to perform oceanographic research. The Shucha II improved on this design and oriented the mission strictly toward patrol activities by eliminating the survey handling equipment and stern A-frame, replacing them with a larger helicopter deck and launch facilities for small interceptor boats. The Shucha II, like its predecessor, is equipped with a hybrid diesel-electric power plant—providing good cruising efficiency and range—and a drivetrain that uses steerable electric propulsor pods—giving it excellent maneuverability. Moreover, Shucha II has positions available for installation of 30 mm main guns in the future, if required.²⁷

Arguably comprising the most capable and versatile class in the CCG, the four Shuoshi II-class units are based on MSA's flagship *Hai Xun 01*, built several years earlier. With a length of 130 m and beam of 16 m (fifty-two feet) and a 5,800-ton displacement, it is similar in overall size and design to the U.S. Coast Guard's Legend-class National Security Cutter. The Shuoshi II design is configured for long-distance open-ocean operations in any weather conditions. It is fitted with high-capacity water cannon and a helicopter landing deck and hangar, and has design provisions for the future fitting of a 76 mm gun. However, unlike that of many other large, purpose-built patrol ships the CCG operates, a Shuoshi II's aft area is considered a "working stern," capable of performing light rescue and salvage operations and moderate towing of ships at sea, giving this class a well-rounded capability that is not limited to law-enforcement operations. While it remains unclear whether additional hulls will be built, this is one of the world's most capable, versatile MLE vessels.²⁸

The Zhaolai-class patrol ship likely was an off-the-shelf design intended to provide the capability quickly to interact with Japanese and Vietnamese vessels in the Senkakus and the South China Sea. The Zhaolai is based closely on the CRS Hai Jiu 111-class salvage and rescue ship, giving it a heavy-duty hull, a powerful engineering plant, and the ability to operate in even the worst sea and weather conditions. The 4,800-ton Zhaolai design eliminated the large salvage cranes present on the CRS variant and added davits for small interceptor boats. Each of the CCG's four Zhaolais also is equipped with a helicopter landing deck and has a mount position forward for a 76 mm gun, should the CCG desire to backfit the ship with one. Among CCG ships, the Zhaolai is configured best for heavy towing and shouldering of other ships, and its large, high-mounted water cannon can be used both for firefighting and for dousing smaller foreign ships during close-in, nonkinetic dissuasion operations. As the Zhaolai was initially an off-the-shelf stopgap solution to CCG capability shortfalls and is inferior to more-specialized designs, it is unlikely that additional units will be built.²⁹

TABLE 4
CHINA COAST GUARD OFFSHORE SURVEILLANCE, PATROL, AND SOVEREIGNTY-ENFORCEMENT ORDER OF BATTLE (SELECTED)

Class	Number in Country	Known Pennant Numbers	Length (feet)	Displacement (tons)	Guns (millimeters)
Zhaotou WPS	2	(Hai Jing) 2901, 3901	541	10,000+	76, 30
Zhaoduan WPS	6	(Hai Jing) 31301–303, 46301–303	450	4,000+	76
Zhaojun WPS	9	21111, 33111, 35111, 37111, 44111, 45111, 46111–13	328	2,700	76
Shuoshi II WPS	4	(Hai Jing) 1501, 2501, 2502, 3501	426	5,800	76 (prov.)
Zhaolai WPS	4	(Hai Jing) 1401, 2401, 3401, 3402	325	4,800	76 (prov.)
Shucha II WPS	10	(Hai Jing) 1305–307, 2305–308, 3306–308	321	4,000	30
Hai Yang WPS (ex-PLAN)	1	(Hai Jing) 3368	345	3,325	none
Kanjie WPS (ex-PLAN)	1	(Hai Jing) 2506	425	5,830	removed
Type 053 Jiangwei I WFF (ex-PLAN)	3	(Hai Jing) 31239 [former PLAN FF 539], 31240 [former PLAN FF 540], 31241 [former PLAN FF 541]	367	2,000	37
Shusheng WPS	5	(Hai Jian) 1010, 2115, 3015, 7008, 9010	290	1,750	14.5 (prov.)
Shuke I/II/III WPS	20	I: (Hai Jing) 1127 II: (Hai Jing) 1123, 1126, 2166, 3175 III: (Hai Jing) 2112, 2113, 3111–13; (Hai Jian) 1002, 1013, 2032, 2168, 4001, 4002, 4072; (Yu Zheng) 46016	245–65	1,450	none
Shuyou WPS	3	(Hai Jing) 1117, 2146, 3171	242	1,000	none
Shuwu WPS	3	(Hai Jing) 1115, 2151, 3184	288	1,750	none
Tuzhong WPS (ex-PLAN)	3	(Hai Jing) 1310, 2337, 3367	278	3,300	none
Haixun II WPS	1	(Hai Jing) 31101	311	1,900	37, 23
Haijian WAGOR/WPS	4	(Hai Jian) 1118, 2149, 3172, 3174	230	1,350	none
Shuzao II/III WPG	15	II: (Hai Jian) 9012 III: (Hai Jian) 1015, 1116, 1117, 2030, 3011, 3012, 4067, 4073, 5030, 7018, 7028, 7038, 8003, 8027	215	600	12.7

CHINA COAST GUARD OFFSHORE SURVEILLANCE, PATROL, AND SOVEREIGNTY-ENFORCEMENT ORDER OF BATTLE (SELECTED) CONTINUED

Class	Number in Country	Known Pennant Numbers	Length (feet)	Displacement (tons)	Guns (millimeters)
Type 618B-II WPG	30+	(Hai Jing) 015,* 12001, 13101, 13102, 21101–104, 31102, 32102, 33101, 33102, 35101–103, 37101, 37102, 44101, 44103, 45101, 45102, 46101, 46102, 46105, 46106 + more	201–208	650	25 or 30

Notes:

PLAN = People's Liberation Army Navy; prov. = provisional (i.e., collar fitted but no gun mounted); WAGOR = oceanographic research ship; WFF = coast guard frigate; WPS = coast guard patrol ship.

* This is a training vessel subordinate to the Maritime Police Academy, but is nonetheless fully combat capable.

Meanwhile, the PAP Maritime Police was primarily a coastal and riverine force not known for its members' seamanship skills, as most of its personnel originated in ground-based PAP units.³⁰ The CCG currently is building a significant number of patrol ships from two new, highly capable classes that apparently were ordered before CCG consolidation by the then PAP Maritime Police (i.e., the old coast guard). The larger of these classes, the Zhaoduan (Type 818), is the CCG's newest and fastest class under construction. It is based directly on the PLAN's Jiangkai II (Type 054)-class guided-missile frigate, using an almost identical hull and likely the same powerful 2+2 combined diesel and diesel (referred to as "CODAD") power plant. This naval design has proved highly reliable in PLAN antipiracy operations in the Gulf of Aden. The overall configuration of the Zhaoduan is similar to the Jiangkai II above the main deck as well, but with an additional superstructure deck added and some other topside changes. The Zhaoduan lacks the powerful combat systems of the Jiangkai II, eliminating the HQ-16 vertical-launch surface-to-air missile system, close-in-weapon systems, and long-range military electronics.³¹ However, the Zhaoduan does retain the same 76 mm main gun as the Jiangkai II. Together with two 30 mm guns, this makes it the CCG's most heavily armed ship. Its helicopter landing area and hangar accommodate Z-9, AW109, or EC135 helicopters. With the propulsion system from the Jiangkai II but a reduced displacement of something over four thousand tons, the Zhaoduan likely can attain a top speed of over thirty knots, making it one of the world's fastest large coast guard ships, with a ten-thousand-nautical-mile range at fifteen knots. These qualities will make the Zhaoduan a go-to workhorse for the CCG. Six units of this class have been launched to date, and additional units have been ordered, according to some media sources.³²

The CCG also is building the smaller Zhaojun (Type 718)-class cutter, using what appears to be an original design. Displacing 2,700 tons, the ship is 328 feet

long and forty-three feet in beam. Its estimated maximum speed is twenty-five knots, its range 6,500 nm. At least nine of these patrol ships have been launched to date, with several already operational, and additional units are possible. The Zhaojun has a helicopter deck and a small interceptor boat-launch facility. Like the Zhaoduan, it is fitted with a 76 mm main gun forward.³³

Capable of operating offshore for regional security missions, Type 618B-II patrol combatants performed with distinction in the 2014 *HYSY 981* oil rig stand-

Today China boasts not only the world's largest navy but also the world's largest maritime law-enforcement fleet—by a sizable margin . . . —more hulls than the coast guards of all its regional neighbors combined.

off. They displace 650 tons, are up to 208 feet long and thirty feet in beam, and have a large power plant capable of around thirty knots top speed and a two-thousand-nautical-mile range. They are also very

maneuverable. The CCG's more than twenty-five hulls of this type each have a 25 mm or 30 mm main gun and high-capacity water cannon. Some units have a fast-boat launch ramp at the stern.

Aside from these purpose-built border-defense ships and craft, the CCG has accepted three former PLAN Jiangwei I patrol frigates. Their missiles and most naval systems have been removed, but each retains twin 37 mm guns and a helicopter hangar. These ships are only two thousand tons in displacement, 367 feet in length, and 40.7 feet in beam; their strength is a top speed of around thirty knots and a range of 4,500 nm at eighteen knots.

FACILITIES

In recent years, copious open-source information has indicated that China is consolidating its myriad MLE facilities into a smaller number of larger bases with substantial berthing capacity and other shoreside infrastructure. Although the precise number of CCG maritime facilities in China is difficult to determine, the service is thought to have over two hundred total facilities at which ships or small craft are stationed.³⁴ However, fewer than forty of these are regarded as large bases that can accommodate offshore-capable patrol ships. The rest provide basing for coastal or local patrol craft and patrol boats. Many of these smaller bases are collocated with or near fishing harbors, and are home to FLE patrol craft that require limited shoreside infrastructure. Many other facilities host even smaller inshore patrol boats, and essentially are just a small pier or jetty with a single support building, if that.³⁵

In recent years, the most substantial CCG bases have been expanded significantly, with much larger piers to accommodate all the new ships and substantial shoreside capacities, including barracks, athletic facilities, and, in some cases,

TABLE 5
SELECTED MAJOR CHINA COAST GUARD FACILITIES

Location	Province or Equivalent	Coordinates (approx. latitude/longitude)
Beihai	Guangxi	21.485, 109.084
Fangchenggang Shipping	Guangxi	21.626, 108.316
Qinzhou	Guangxi	21.736, 108.639
Jinzhou	Liaoning	40.846, 121.103
Fuzhou Guling	Fujian	26.055, 119.353
Fuzhou Tingjiang	Fujian	26.074, 119.513
Xiamen downtown	Fujian	24.467, 118.065
Xiamen China Coast Guard (CCG) base	Fujian	24.511, 118.065
Dalian Mianhuadao	Shandong	39.006, 121.675
Dalian Wantong	Shandong	39.010, 121.709
Yantai Yangma Dao	Shandong	37.444, 121.582
Yantai Zhifu Bay	Shandong	37.545, 121.392
Tianjin port area	Tianjin	38.985, 117.728 (vicinity)
Guangzhou Taihe	Guangdong	23.109, 113.395
Huangpu Changzhou	Guangdong	23.077, 113.432
Huangpu Luntou	Guangdong	23.078, 113.375
Shantou	Guangdong	23.353, 116.688
Zhanjiang Tiaoshun	Guangdong	21.286, 110.409
Qinhuangdao fishing wharf	Hebei	39.921, 119.617
Qinhuangdao coal terminal	Hebei	39.935, 119.668
Shanghai Fuxing Dao	Shanghai	31.288, 121.561
Shanghai Gaoqiao	Shanghai	31.357, 121.614
Shanghai port facility	Shanghai	31.384, 121.549
Nantong	Jiangsu	31.908, 120.910
Haikou port	Hainan	20.031, 110.278
Haikou Haidian River	Hainan	20.025, 110.323
Sanya	Hainan	18.233, 109.492
Wenchang	Hainan	19.560, 110.825
Qingdao Tuandao Inlet	Shandong	36.050, 120.298

SELECTED MAJOR CHINA COAST GUARD FACILITIES CONTINUED

Location	Province or Equivalent	Coordinates (approx. latitude/longitude)
Qingdao port area	Shandong	36.082, 120.309
Qingdao Huangdao	Shandong	36.005, 120.272
Zhoushan Waichangzhi	Zhejiang	29.980, 122.082
Ningbo CCG Academy	Zhejiang	29.945, 121.710
Wenzhou Lucheng	Zhejiang	28.025, 120.672

Source: Located via Google Earth.

limited ship-repair facilities. Growing emphasis on ship repair shows both an understanding of a maturing fleet's operational needs and a desire to avoid being subordinated to the PLAN for access to maintenance. As part of these efforts, the CCG built its first floating dry dock. The dock can be moved to different locations, including South China Sea "features," and can accommodate smaller patrol ships.

Although the CCG reform began in 2013, in most cases the service's facilities remain somewhat segregated according to organizational mission; that is, bases that previously hosted FLE ships continue to host ships that perform fisheries-enforcement activities. It is unclear whether duplicative facilities will be eliminated in the future.³⁶

CHINA MARITIME SAFETY ADMINISTRATION

MSA was not included in the 2013 CCG consolidation and remains an independent agency with its own fleet and facilities. MSA is responsible for the control and securing of China's maritime ports and commercial maritime traffic, for aids to navigation (buoys, lighthouses, etc.), for pollution control, and for SOLAS, among other missions. MSA's presence largely is limited to China's territorial waters, although the agency does have several large patrol ships that occasionally take long voyages for joint exercises with other nations' coast guard forces or to participate in search-and-rescue operations (such as searching for the missing plane from Malaysia Airlines Flight 370). However, the great majority of the MSA fleet is composed of hundreds of coastal patrol craft; thousands of inshore patrol boats; and a variety of specialized vessels used for buoy tending, hydrographic survey, pollution cleanup, and other utilitarian roles.³⁷

MSA, while considered a law-enforcement agency, generally is not involved in territorial disputes (such as in the South China Sea or Senkakus), fisheries enforcement, customs, or other countercriminal activities. MSA maintains a good working relationship with regional forces, including the U.S. Coast Guard,

the Japan Coast Guard, and South Korea's Korea Coast Guard, and often works jointly with these forces.³⁸

CHINA RESCUE AND SALVAGE

CRS, while not a law-enforcement organization, nonetheless is a government-run agency under China's Ministry of Transportation that has a substantial presence in China's maritime realm. CRS operates both in an official capacity (in support of SOLAS) and in a commercial capacity, taking on contract work ranging from towing stranded ships and salvaging sunken ships to transporting and placing commercial oil rigs.

Profits from this commercial side provide CRS with a substantial independent budget, much of which CRS spends on constant modernization of its impressively large fleet of rescue, salvage, heavy-transport, semisubmersible, and large crane ships. The most visible CRS units are the thirty-plus modern rescue and salvage ships, which spend most of their time loitering in busy maritime traffic areas and roadsteads off Chinese ports.

CRS has several major bases, some of which are collocated with or near CCG or MSA facilities, but CRS generally does not operate with or interact heavily with CCG forces.³⁹ While CRS's large ships may be present in the vicinity of maritime disputes, they typically are there only to provide rescue in case of damage to other-agency (or foreign) ships and do not get involved in any enforcement or deterrence activities.

CRS is highly regarded in the international maritime community owing to its courageous, professional, and experienced personnel, strong rescue ethic, modern and highly capable fleet of ships, and lack of involvement in maritime disputes. CRS ships often are contracted to perform transport and other work around the globe.⁴⁰

In building both the world's largest coast guard and the largest overall MLE force, China has achieved an impressive increase in its maritime capabilities. It has leveraged massive capacity for building all sizes of patrol ships, cost relief from commercial construction profits, and domestic production of most systems (including engines and electronics) to field a formidable number and variety of ships specialized for different roles and operating areas. Enhanced CCG capacity is envisioned to allow the PLAN to focus on naval roles beyond the first island chain, with a commensurate reduction in PLAN small patrol craft over the past decade.⁴¹ Moreover, new CCG ships capable of long-distance operations in higher seas—the largest capable of operating globally—could permit extended deployments beyond maritime East Asia (e.g., to conduct antipiracy patrols or

perform escort duties along sea lines of communication). CCG modernization and expansion afford China presence and influence to further its East and South China Seas sovereignty claims while maintaining both domestic and international law-enforcement capability regionally.

China will continue to modernize its MLE agencies' respective fleets, with primary emphasis on the consolidated CCG. However, the winding down of the major ship-construction program of 2010–17 portends less class variation and more

[M]assive infrastructure builds, evolutionary ship designs, and extensive use of commercial, off-the-shelf components offer China the ability to surge CCG ship construction rapidly.

focus on future construction of a few (perhaps three or four) major classes and several minor classes, to streamline logistics and operations. Emphasis on size is giving way to

emphasis on speed and filling capability gaps. The CCG likely will continue to grow numerically but is unlikely to repeat the rate of growth of the past decade—primarily because China by now has replaced virtually all its older, less-capable large patrol ships.

In the coming decade, China likely will prioritize smaller coastal-patrol craft and patrol combatants to continue replacement of the large fleet of small craft that were built largely in the 1990s and are nearing the end of their operational life spans. The CCG undoubtedly will focus on remedying its major remaining areas of weakness: severe rotary-wing limitations (only about fifty helicopter-capable ships and few helicopters); uneven existing crew training, with seamanship competency depending on former agency; and ships being produced faster than new crewmembers can be trained.⁴² To improve situational awareness, the CCG likely will acquire additional maritime-patrol aircraft, including helicopters (imported or domestic). It will strive to strengthen planning, communications, and operational control.

While China will continue to focus on security enforcement of its established territorial waters and EEZ, the CCG will continue to operate regularly throughout waters within the first island chain to support China's maritime claims, as well as to perform enforcement and surveillance operations. Forward-basing CCG units on augmented features in the Paracels and Spratlys will enhance operational tempo and facilitate coordination with the PLAN and PAFMM.

These expanding CCG capabilities support a decisive shift in Chinese maritime strategy: from a three-sea-force focus on regional seas to an evolving division of labor in which its first sea force—the PLAN—significantly increases its overseas missions and focus. While regional operations likely will remain the focus for China's second sea force, its MLE forces centered on the CCG, the larger CCG ships increasingly could deploy out of area into the Pacific and Indian

Oceans, both to increase presence and influence and to participate in joint coast guard exercises with other major countries, including the United States, Japan, South Korea, Russia, and India.

As before, designs will be adapted to suit new missions. Moreover, massive infrastructure builds, evolutionary ship designs, and extensive use of commercial, off-the-shelf components offer China the ability to surge CCG ship construction rapidly, if desired. When it comes to rapidity of fleet expansion and modernization, China's second sea force already is leading the way.

NOTES

Authors' note: The information in this article does not rely heavily on other finished academic papers or analyses, although several of these are cited for context. Instead, the great majority of supporting information derives from the authors' compilation and original analysis of a vast body of available open-source, firsthand information, almost all of which is posted on the Internet. The majority comes directly from tens of thousands of specific Internet and media sources that cannot be listed individually. For a full discussion of the documentation methodology and sources used herein, see the *China Analysis from Original Sources* website at the following url: www.andrewerickson.com/2019/02/open-source-research-on-chinas-maritime-law-enforcement-force-structure-development-methodology-references/.

1. This article surveys China's principal MLE ships from a platform-centric perspective, organized by mission set. Broadly categorized, MLE forces include the national-level China Coast Guard; the portion of China Marine Surveillance (CMS) and Fisheries Law Enforcement (FLE) vessels organized at the subnational level (which still exist and are active in the "gray zone," but are not included in the CCG); Maritime Safety Administration (MSA) vessels, which exist outside the CCG even at the national level; and China Rescue and Salvage (CRS) vessels, which are outside the CCG even at the national level and generally play only supporting (not MLE/sovereignty-upholding) roles. The present analysis spotlights the CCG as the core organizing entity for the majority of China's MLE forces at the national level, whose consolidation

remains a work in progress, and refers to them broadly as "China's coast guard." The article also addresses some of the most important non-CCG ships, including from provincial-level—but not municipal—MLE organizations. This ecumenical, organizationally flexible approach, which acknowledges the complexities and vicissitudes of China's evolving empirical reality, has the virtue that the vessels themselves remain discrete and readily identifiable amid substantial changes in leadership, control, and nomenclature. China's MLE organizations have been reconfigured tremendously in recent years (and reforms remain ongoing), and vessels have shifted both among them (as well as having been transferred in from the PLAN) and in their relationship to the gray zone. The past decade also has witnessed multiple firsts in terms of China's MLE assets operating in certain areas. MLE fleet usage, like the general regional situation, is fluid. Ships from *all* the agencies (including FLE, General Administration of Customs [GAC], and MSA) have been observed participating in, or at least in the vicinity of, conflicts in the gray zone. For instance, while GAC vessels are absent from many gray-zone operations, GAC patrol craft can be seen in photos of the China National Offshore Oil Corporation *Haiyang Shiyou (HYSY) 981* oil rig operations. Accordingly, our coverage includes some MLE ships and forces (e.g., GAC, MSA, and CRS) that are not always involved in gray-zone operations, but conceivably could become involved in the future, particularly as features the Chinese have augmented in the South China Sea offer forward-deployment options. Moreover, not

all CCG ships are relevant to gray-zone operations. Some are too small to be considered “oceangoing,” although this is a subjective term. For instance, many ships performing disputed-area operations and similar functions displace fewer than five hundred tons, leaving no identifiable size cutoff in this regard. Conversely, some ships outside the CCG are relevant to rights-protection/gray-zone missions. The CCG reorganization in 2013 incorporated only national-level assets, not provincial, county, or municipal MLE vessels. For example, the Zhongtao class is not actually part of the CCG, but rather is part of provincial-level fisheries-enforcement resources. CMS also has provincial-level cutters. Guangdong and Hainan Provinces have provincial-, county-, and municipal-level cutters relevant to rights-protection/gray-zone missions. One vessel dramatically encapsulates the value of a platform-centric approach: Having joined FLE in November 2010, Zhongyang-class patrol ship *Zhong Guo Yu Zheng 310* conducted multiple rights-protection missions when it was homeported in Guangzhou, including the 2012 Scarborough Reef standoff and its March 2013 jamming of Indonesian Ministry of Maritime Affairs and Fisheries vessel *Hiu Macan 001*. From July 2013 to May 2015 the vessel was designated CCG 3210 and participated in the 2014 HYSY 981 incident. Redesignated *Sansha City Comprehensive Law Enforcement 1* in May 2015, the ship now is based in Sansha City and engages in further sovereignty missions. Scott Bentley, “Indonesia’s ‘Global Maritime Nexus’: Looming Challenges at Sea for Jokowi’s Administration,” *The Strategist*, September 24, 2014, www.aspistrategist.org.au/; Ryan D. Martinson, “The Lives of a Chinese Gunboat,” U.S. Naval Institute *Proceedings* 142/6/1,360 (June 2016), pp. 34–39. For the leading organization-centric analysis of the CCG, see Ryan D. Martinson, *Echelon Defense: The Role of Sea Power in Chinese Maritime Dispute Strategy*, China Maritime Study 15 (Newport, RI: Naval War College Press, February 2018), available at digital-commons.usnwc.edu/. The authors thank Ryan Martinson and Barney Moreland for helpful inputs.

2. For analysis of Chinese MLE participation in gray-zone operations, see Andrew S. Erickson

and Ryan D. Martinson, *China’s Maritime Gray Zone Operations* (Annapolis, MD: Naval Institute Press, 2019).

3. Ryan D. Martinson, “China’s Second Navy,” U.S. Naval Institute *Proceedings* 141/4/1,346 (April 2015), available at www.usni.org/.
4. Lyle J. Morris, “Blunt Defenders of Sovereignty: The Rise of Coast Guards in East and Southeast Asia,” *Naval War College Review* 70, no. 2 (Spring 2017), p. 84. Japan’s coast guard has around eighty hulls and South Korea’s forty-five, and the U.S. Coast Guard has fifty. Unless otherwise specified, all such numbers represent the authors’ estimates based on open sources.
5. Tonnage and displacement are not an accurate measure of sea keeping. For example, many PAFMM boats can operate across the ocean, but most are below five hundred tons. In contrast, some vessels of greater than a thousand tons are not suited to offshore operations. For ease of readability and metrics, this article’s tables group vessels as “oceangoing” or “offshore capable,” but in reality there is no set measure for assigning a ship to such categories. The phrase *capable of operating offshore* and the numbers associated with it are the product of analysis aimed at determining which specific ships can operate competently at significant distances from the coast. Ships that cannot operate offshore are not included, regardless of displacement.
6. The CCG lacks underway replenishment capabilities, so port access is essential when additional supplies are needed.
7. Ryan D. Martinson, “From Words to Actions: The Creation of the China Coast Guard” (paper presented at the “China as a ‘Maritime Power’ Conference,” CNA conference facility, Arlington, VA, July 28–29, 2015), p. 14, available at www.cna.org/.
8. Office of Naval Intelligence, *The PLA Navy: New Capabilities and Missions for the 21st Century* (Washington, DC: 2015), pp. 44–45, including fig. 5-3 (“Regional Maritime Law Enforcement Comparison”); Martinson, “From Words to Actions”; Swee Lean Collin Koh, “Beijing’s ‘White Hull’ Challenge in the South China Sea,” *National Interest*, January 13, 2016, www.nationalinterest.org/.

9. Stephen Saunders, China listings in *IHS Jane's Fighting Ships*, 116th ed. and earlier.
10. Most U.S.-allied military organizations used this term during the 1990s and early years of the following decade to describe white hulls. WAGOR = (W)AGOR, with *W* indicating a nonnaval designation and *AGOR* signifying an oceanographic research ship.
11. Masafumi Iida, "Maritime Expansion by China," *Sasakawa USA*, October 22, 2014, spfusa.org/.
12. By contrast, SOA drew its officers primarily from among retired PLAN officers and MSA drew its officers from the merchant fleet, so both services had an easier time adapting to larger offshore vessels. Barney Moreland [Capt., USCG (Ret.)], personal interview, December 3, 2018. Captain Moreland is a former U.S. Coast Guard liaison officer to China.
13. Its launch was delayed by several years because the 2008 Wenzhou earthquake caused the government to sweep unspent moneys to effect recovery, which pushed back shipbuilding schedules. To cover the gap, FLE took possession of an old PLAN submarine rescue ship and recommissioned it as *FLE 311*, until the purpose-built cutter 310 could be constructed. *Ibid.*
14. The Fisheries Law Enforcement Command also has had a very close working relationship with the U.S. Coast Guard.
15. Xiao Ming, "China Maritime Safety Administration in the New Millennium: Challenges and Strategies," Paper 424 (dissertation, World Maritime Univ., 2000), especially pp. 13, 21, available at commons.wmu.se/.
16. See, for example, Yang Chang, "Zhongguo Haijian Tianjin Shi weiquan zhifa chuandui guapai" [CMS Tianjin rights-protection law-enforcement fleet is set up], *China Ocean News*, April 19, 2013, p. 4; Martinson, "From Words to Actions," pp. 18, 44–45; Ryan Martinson, "Power to the Provinces: The Devolution of China's Maritime Rights Protection," Jamestown Foundation *China Brief* 14, no. 17 (September 10, 2014), available at jamestown.org/.
17. 孙鼎 [Sun Ding], 海监队员是怎样炼成的 ["How CMS Personnel Are Trained"], *中国海洋报* [*China Ocean News*], December 27, 2013, p. 3; Martinson, "From Words to Actions," pp. 14, 22; 海洋发展战略研究所课题组 [China Institute for Marine Affairs Special Topic Group], 中国海洋发展报告 (2013) [China's Ocean Development Report (2013)] (Beijing: Ocean, 2013), p. 267.
18. Very few of the "new," more specialized ships were constructed after the CCG consolidation of 2013. The consolidation happened only five years ago, so most ships launched by the time of publication were ordered, or at least planned, before that happened. To date, the postconsolidation CCG has not received many new ships of its own.
19. Despite Internet speculation, however, the Zhaogao is not based on the Jiangdao-class corvette.
20. "China Coast Guard Gets New Patrol Vessel Based on PLAN's Type 056 Corvette," *Navy Recognition*, February 4, 2016, www.navyrecognition.com/.
21. This refers to the same kind of joint patrols and open-ocean fisheries surveillance that FLE has been doing for years with smaller, less-capable patrol ships.
22. Lyle Goldstein, "Chinese Fisheries Enforcement: Environmental and Strategic Implications," *Marine Policy* 40 (2013), pp. 187–93, available at digitalcommons.unl.edu/; "Fisheries Law Enforcement Command," GlobalSecurity.org.
23. A ship's *tumblehome* refers to the narrowing of its upper hull as it rises above the waterline, primarily to reduce radar and wake signatures.
24. "CMS—China Marine Surveillance," GlobalSecurity.org; "China Coast Guard," *OPLAN: China* (blog), n.d., www.oplanchina.blogspot.com/.
25. The press releases that announced the Zhaotou flagships' launch specifically highlighted that this class had hulls that were reinforced for ramming and shouldering, but were surprisingly mute regarding traditional coast guard capabilities (e.g., how many boarding teams they could deploy, or their rescue capabilities). They have substantial command and control suites aboard, including conference rooms and command centers, and can berth VIPs. Apart from being a floating command center, they have no capabilities that smaller, faster, cheaper cutters do not share. Moreland interview, December 3, 2018.

26. China Shipbuilding Industry Corporation, hundreds of press releases 2005–17, available at www.csic.com.cn/.
27. Notably, as the Shucha II class became operational, in recent years the two Shucha Is were transferred back to SOA's scientific branch and renamed with Xiang Yang Hong prefixes, not the Zhong Guo Hai Jian and Hai Jing prefixes on the newer ships.
28. Firsthand design analysis based on photography of the MSA Shuoshi I- and CCG Shuoshi II-class ships.
29. Firsthand analysis of design, compared with CRS heavy salvage ships.
30. "People's Armed Police," GlobalSecurity.org.
31. Photography from *Super Base Camp Military Forum*, www.cjdbby.com, and other web forums, compared with the known configuration and design of the Jiangkai II frigate.
32. SinoDefence forum and blog articles, www.sinodefenceforum.com/.
33. Hobbyshanghai web forums and blogs, www.hobbyshanghai.net.cn/.
34. This is based on extensive examination of press articles, photography, and commercially available satellite imagery (Google Earth, etc.).
35. China Defense.com forum and blog, www.china-defense.com/. This discussion forum has an extensive subforum devoted to discussion of maritime and naval basing in China, which was used to supplement firsthand searches via open-source imagery.
36. Google Earth, www.google.com/earth. This open-source imagery program is available online. Results are from personal searching of China's coastline over several years, revealing confirmed and probable base locations for CCG ships. Google Maps (www.google.com/maps) then was used to determine the locality names of these bases and facilities. See also China Defense.com forum and blog.
37. China MSA official website, various dates 2005–18, en.msa.gov.cn/. The material includes thousands of official press releases detailing MSA ship launches, ship orders, ship ceremonial events, operational mission details, and photography.
38. According to MSA's extensive and comprehensive daily press releases. *Ibid.*
39. It does coordinate frequently with MSA.
40. China Rescue and Salvage official website, various dates 2005–18, en.crs.gov.cn/. CRS regularly posts press releases and photography of CRS contracts, ship launches, operations, and rescue/salvage work. Multiple CRS bureaus also maintain their own websites. Details of CRS missions, basing locations, and order of battle from Song Jiahui [Capt.], Director-General, CRS, "Maritime Rescue and Salvage in China: A General Introduction and Some Typical Cases" (PowerPoint presentation, November 2009), available at www.transportation.gov/.
41. While China's three sea forces already have made some progress in implementing this division of focus, the pushback on China's maritime expansionism from immediate neighbors as well as the United States and other Western countries is keeping much of the PLAN currently pinned down in the South and East China Seas upholding China's expansive claims.
42. Ryan D. Martinson, "The Arming of China's Maritime Frontier," *China Maritime Report 2*, *U.S. Naval War College*, June 2017, www.usnwc.edu/.



U.S. CONVENTIONAL ACCESS STRATEGY

Denying China a Conventional First-Strike Capability

Sam Goldsmith

The People's Republic of China makes extensive territorial claims over Taiwan, the East China Sea, and the South China Sea. China's neighbors openly dispute these claims and the international community does not recognize most of them. The Chinese government views the settlement of these disputes on terms favorable to China as a national priority. Ideally, the Chinese government would like to resolve these disputes through diplomatic channels or by using coercive and paramilitary techniques that fall short of triggering armed conflicts.¹ However, concurrently the People's Liberation Army (PLA) is preparing war plans and acquiring capabilities to resolve these disputes through the use of armed force. The Chinese government views all its territorial disputes as "core interests" and has signaled its willingness to achieve these core interests through the use of armed force. The U.S. government openly opposes any coercive or aggressive activities that upset the status quo, putting it at odds with the Chinese government.²

The problem is that the Chinese leadership appears unconvinced that the United States would risk a conflict with China—one that could escalate to a

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nuclear war—over disputes concerning territories that geographically are distant from the U.S. mainland and seemingly are unrelated to core U.S. national security interests.³ However, the PLA has a relatively small nuclear arsenal, estimated at fewer than four hundred warheads, in contrast with the U.S. arsenal, which has around 1,550 warheads.⁴ Any nuclear strike China made on the United States would involve only a fraction of the PLA's overall arsenal, because it would need to retain

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some reserve to deter other nuclear-armed neighbors, such as Russia and India. If the Chinese leadership authorized a nuclear strike against the U.S. homeland, or even a limited nuclear strike against forward-deployed U.S. forces, it would be inviting overwhelming devastation from the considerably larger U.S. nuclear force.⁵ For these reasons, China likely would aim to confine itself to the use of conventional weapons during any potential high-intensity conflict with the United States—particularly given that China already possesses a lethal array of long-range, conventional, theater-strike options.⁶ Such a strategic, conventional, first-strike option is one that the United States should seek to deny China by developing an effective conventional access strategy.

The U.S. military has three principal strategic objectives. The first is to protect the U.S. mainland and offshore U.S. territories from armed attacks.⁷ The second is to foster a stable, rules-based, global security order through an interconnected web of alliances and partnerships. The third is to deter and, if necessary, decisively defeat aggressors through the projection of military power. Under the national military strategy that the Joint Staff published in 2015, the U.S. military would deter and defeat state aggressors by leveraging U.S. forward-deployed units, force-projection capabilities, alliances, communications networks, and “resilient logistics” infrastructure.⁸ This strategy appears identical to the U.S. military’s force-projection approach to the 1991 Gulf War.⁹ But the central problem with emulating the Gulf War style of force-projection operations is that in future decades the U.S. military no longer will enjoy uncontested use of its forward bases or the ocean.¹⁰

Operation DESERT STORM required the U.S. military to transport around five hundred thousand personnel, 6.1 million tons of fuel, and 3.7 million tons of equipment and stores to the Persian Gulf theater. Building up sufficient personnel, equipment, stores, and supplies required seven months of intense air and sealift operations, as well as access to bases in Saudi Arabia.¹¹ Because of the range limitations of tactical aircraft and payload-laden airlifters, the U.S. Air Force (USAF) was forced to use in-flight refueling tankers to form “air bridges.” Air bridges allowed aircraft with range limitations to cross oceans by flying between in-flight refueling tankers until they reached the desired theater of operations. USAF in-flight refueling tankers also supported U.S. and allied short-range tactical aircraft, flying around 16,868 sorties to deliver four hundred thousand tons of fuel in flight.¹² The U.S. military deployed a total of around 1,600 short-range tactical aircraft that operated from in-theater air bases and six U.S. Navy (USN) aircraft carriers stationed in littoral waters.¹³ Long-range, precision-guided munitions accounted for around 5 percent of all air-to-ground ordnance delivered, supported by around sixteen Global Positioning System (GPS) satellites.¹⁴ U.S.

military satellite constellations also gathered intelligence and provided global communications.¹⁵

The PLA keenly observed the 1991 Gulf War, particularly American exploitation of conventional, long-range, precision strikes.¹⁶ The PLA also observed how two USN carrier strike groups intervened during the 1995–96 Taiwan Strait crisis. Both developments highlighted the PLA's technological inferiority and inability to prevent USN sea power from threatening the Chinese mainland.¹⁷ In response, the PLA has developed a “counterintervention strategy,” designed specifically to negate traditional U.S. advantages in global force projection. The core problem is that the PLA's counterintervention capabilities could be used to undermine the U.S. military's credibility to deter and defeat state aggressors—thereby increasing the likelihood of a China-U.S. armed conflict.

PLA COUNTERINTERVENTION STRATEGY

Strategically, the PLA is tasked with using its counterintervention strategy to deter the United States and deny the U.S. military access to the western Pacific. The primary purpose of this strategy is to provide the Chinese government with the ability to isolate and coerce U.S. allies or regional countries to accept Chinese sovereignty demands in a number of territorial disputes.¹⁸ The PLA might be directed to apply this counterintervention strategy in relation to the disputed sovereignty over Taiwan, the Yellow Sea, the East China Sea, and the South China Sea.¹⁹

The PLA's counterintervention strategy requires four main types of military operations: theater strike, denial of service, antiaccess, and area-denial operations. Ideally, all four types of operations would be carried out simultaneously; however, the PLA's finite resources might force it to prioritize. If the PLA were forced to prioritize, it would place the greatest emphasis on neutralizing forward-deployed U.S. forces, followed by denying critical services to the U.S. military, followed by activities to prevent the U.S. military from reinforcing the Pacific theater. Theater-strike operations would be required to disable or destroy forward-deployed U.S. military assets, including aircraft, ships, and submarines, in addition to infrastructure at U.S. bases located west of Pearl Harbor.²⁰ Strikes against these targets would be executed rapidly at the outset of a conflict to catch adversaries unprepared and achieve decisive in-theater superiority.²¹

In carrying out this strategy, the PLA will employ each of its four subordinate service branches: the PLA Army, the PLA Navy (PLAN), the PLA Air Force (PLAAF), and the PLA Rocket Force (PLARF). PLAN submarines would execute undersea attacks against U.S. ships and submarines in port or at sea and strike at land targets with cruise missiles.²² The PLAAF would execute air strikes against

U.S. aircraft on the ground or in the air, as well as U.S. ships and submarines in port or at sea. Strikes against U.S. bases would occur with extended-range missiles launched from PLAAF combat aircraft or conventional ballistic missiles launched from the Chinese mainland.²³

PLAAF combat aircraft can deliver antiship cruise missiles (ASCMs) out to two thousand kilometers (km) from the Chinese mainland, and PLAAF H-6 long-range bombers can deliver land-attack cruise missiles out to 3,300 km from the Chinese mainland. Air-launched cruise missiles would be supplemented by PLARF conventional ballistic missiles. The PLARF's DF-16 short-range ballistic missile would strike land targets at a range of around eight hundred kilometers. The PLARF's DF-21 medium-range ballistic missile (MRBM) would strike land targets or moving ships in the DF-21D antiship ballistic missile (ASBM) configuration at a range of around 1,500 km.²⁴ The PLARF's DF-26 intermediate-range ballistic missile (IRBM) would strike land targets or moving ships in the ASBM configuration at ranges around three thousand kilometers.²⁵

Denial-of-service operations would aim at denying the United States unfettered use of its command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) infrastructure.²⁶ Successful PLA denial-of-service operations would hinder the U.S. military's ability to execute land-attack strikes from USN submarines in the western Pacific, receive up-to-date intelligence from USN submarines on patrol, marshal combat resources to reinforce the Pacific theater, and communicate with surviving U.S. forces in the western Pacific. One method would be for the PLA to apply its antisatellite (ASAT) technologies to incapacitate, disrupt, or destroy U.S. military satellite constellations used for global communications, satellite navigation, and intelligence gathering.²⁷ PLA ASAT technologies include lasers, microwave technologies, and hard-kill methodologies.²⁸ Cyberwarfare capabilities also provide the PLA with a sophisticated method to disrupt or deny the U.S. military's use of its C4ISR infrastructure.²⁹

Antiaccess operations would degrade or deny USAF and USN force-projection capabilities for accessing the western Pacific, thus isolating U.S. allies.³⁰ Denying USN seaborne force-projection capabilities would be a priority because over 90 percent of all U.S. military assets, stores, and equipment are transported by sea.³¹ PLA antiaccess operations would force USN task forces to run a gauntlet of layered offensive PLA capabilities during the approach to the western Pacific.³² Surviving USN task forces likely would arrive in theater with depleted missile magazines, having suffered fleet-wide damage or ship losses, or both, just to come within range of the Chinese mainland. Weapons and vessels available for Chinese antiaccess operations include DF-21D ASBMs, potentially

DF-26 ASBMs, air-launched ASCMs, diesel-electric and nuclear-powered attack submarines, and surface combatants.³³

U.S. airpower also could be denied access to the western Pacific through the deployment of PLAN aircraft carrier battle groups. Other options might include arming PLAN nuclear-powered attack submarines with submarine-launched, anti-air missiles to shoot down USAF in-flight refueling tankers and cargo-transport aircraft. Concurrently, some PLA units would aim to interdict U.S. follow-on forces outside the western Pacific, particularly in Hawaii and Australia, with the aim of harassing and interfering with the deployment of U.S. and allied forces into theater.³⁴

Area-denial operations would be required to limit the freedom of maneuver of air or maritime forces in coastal areas close to the Chinese mainland. PLA capabilities that could be used for area-denial operations include advanced sea mines, diesel-electric submarines, maritime strike aircraft, surface combatants, Type 022 missile patrol boats armed with ASCMs, coastal ASCM batteries, land-based air-defense systems, and land-based conventional and rocket artillery batteries.³⁵

PLA PASSIVE DEFENSES

Concurrently, the PLA has invested in three types of passive-defense capabilities designed specifically to enable continuity of PLA conventional and nuclear war-fighting capabilities, even if the Chinese mainland comes under heavy attack. PLA passive-defense capabilities include land-based sensor networks; land-based command, control, and communications (C3) networks; and hardened facilities.

First, the PLA has invested in extensive land-based sensor networks to provide persistent wide-area surveillance of the western Pacific to enable PLA land-based, long-range strike capabilities. The PLA uses land-based Skywave over-the-horizon (OTH) radar technology to track aircraft and ships at ranges of several thousand kilometers from the Chinese mainland.³⁶ The PLA uses Surfacewave OTH radar arrays to track aircraft and ships at long ranges from the Chinese mainland.³⁷ These capabilities are being augmented with other infrared, pulsed-Doppler radar, phased-array radar, and passive radar detection technologies.³⁸ The PLA uses passive undersea sensors to detect and track submarines operating within Chinese littoral waters.³⁹ The PLA's land-based intelligence, surveillance, and reconnaissance (ISR) capabilities are augmented by PLAAF airborne warning and control system aircraft, unmanned aerial vehicles, and ISR satellites.⁴⁰

Second, the PLA has invested in survivable, land-based C3 systems designed specifically to enable the Chinese national command hierarchy to retain basic C3 functions over all PLA branches, even while under heavy attack.⁴¹ PLA C3 systems include underground fiber-optic cables; microwave relays; and

TABLE 1
TYPES OF HARD TARGETS

Type	Definition
Hardened structure (HS)	Aboveground HS: aboveground facilities or structures that are protected from kinetic and air-blast weapons effects because of their aerodynamic shape that deflects blast waves—typically covered with earth and reinforced concrete ^a
	Shallow-underground HS: underground facilities or structures up to twenty meters below the earth’s surface
	Deep-underground HS: underground facilities or structures twenty or more meters below the earth’s surface
Hard and deeply buried target (HDBT)	Underground facilities one to seven hundred meters below the earth’s surface that protect a country’s national command structure, critical activities, equipment, personnel, or strategic military response options from nuclear weapons effects

Note:
a. National Research Council of the National Academies, *Effects of Nuclear Earth-Penetrator and Other Weapons* (Washington, DC: National Academies Press, 2005), p. 14.

long-range, high-frequency radio technologies augmented by civilian communication channels.⁴²

Third, the PLA has invested heavily in aboveground hardened structures (HSs), shallow-underground HSs, deep-underground HSs, and strategic hard and deeply buried targets (HDBTs) (see table 1). The purpose of these hardened facilities is to enable the Chinese national command hierarchy, strategic assets, and other key capabilities such as logistics to survive and remain operational, even after a nuclear strike.⁴³ The PLA has invested in strategic HDBTs to protect the Chinese national command hierarchy in the event of an armed conflict.⁴⁴ These HDBTs are connected to the outside world through extensive land-based communications networks that enable the Chinese national command hierarchy to remain in command of its sea, air, and land forces.⁴⁵

The PLARF has an extensive network of hardened tunnels and facilities buried deep underground and within mountains that can protect land-based strategic assets such as road-mobile ballistic missiles, launchers, and PLARF personnel.⁴⁶ Some reports indicate that the PLARF has 4,856 kilometers of such hardened and deeply buried tunnels, some as deep as one thousand meters. The tunnels form part of an extensive underground web of HDBT facilities and are serviced by internal transport or train networks that move ordnance and launchers. These facilities have surface-level entrances where the missile transporter-erector-launchers (TELS) can access surface-level launchpads.⁴⁷

The PLAAF has hardened its air bases to protect its combat aircraft.⁴⁸ PLAAF air bases feature hardened aboveground HSs, such as aircraft hangars, with reinforced concrete protection estimated to be between 0.9 and 1.2 meters thick. PLAAF air bases also feature underground HSs that function as hangars and

storage facilities. Some of the PLAAF underground HSs are very large, provided with multiple entrances, constructed inside mountains, and covered by anywhere from twenty to sixty meters of concrete, dirt, and rock. Other passive measures include revetments between parked aircraft and long paved areas that can be used as emergency runways, as well as multiple points of access for runways. These measures usually are augmented by advanced camouflage and advanced air-defense systems.⁴⁹

The PLAN also has constructed extensive underground HSs to protect its submarine forces, accessed by sea-level tunnels in coastal areas. These facilities offer PLA submarines the ability to deploy covertly and return without being visible to U.S. overhead surveillance capabilities.⁵⁰ The PLAN naval base on Hainan Island currently is equipped with hardened underground submarine facilities of this nature.⁵¹ The PLAN also plans to construct a significantly larger and more modern underground HS naval base sufficient to protect and house its nuclear-powered, ballistic-missile submarines.⁵²

PLA CONVENTIONAL FIRST-STRIKE CAPABILITY

The PLA's most significant counterintervention capability is its inventory of long-range conventional ballistic missiles, particularly given that the U.S. military does not field an equivalent capability. PLA DF-21 MRBMs and ASBMs have ranges around 1,500 km; PLA DF-26 IRBMs and ASBMs have ranges around three thousand kilometers. It is also important to note that the PLA currently possesses between two and three hundred MRBMs and likely will expand this inventory with the introduction of the DF-26. The long range and growing inventory of PLA conventional ballistic missiles would force relatively slow U.S. maritime assets to run a lethal gauntlet of PLA ASBMs while they are unable to return fire and degrade the threat.⁵³

The U.S. Office of Naval Intelligence has assessed that the PLA's conventional ballistic missiles use maneuvering reentry vehicles (MARVs) equipped with infrared and radar seekers, enabling PLA ballistic missiles to acquire fixed or moving targets during the terminal phase of flight. PLA MARVs are difficult opponents because of their significant agility and high reentry speeds (around Mach 12), as well as electronic warfare, decoy, chaff, and flare countermeasures.⁵⁴

PLA conventional ballistic missiles have the potential to carry submunitions warheads capable of inflicting wide-area destruction, which increases their threat profile.⁵⁵ Against fixed land targets, however, MARV penetrator warheads provide the capability to inflict serious damage to hardened targets.⁵⁶ MARV penetrator warheads could sink USN ships outright, whereas submunitions warheads could inflict a range of damage to them.⁵⁷ For instance, aircraft carrier flight decks, arresting gear, catapults, and landing signal systems could be damaged,

thereby preventing flight operations.⁵⁸ Similarly, USN cruisers and destroyers could suffer damage to phased-array radar panels and Mk 41 vertical launching system (VLS) missile batteries. Damage of either type likely would result in a “mission kill,” rendering the damaged ship unfit to fight. The predicted high lethality and significant impact of PLA conventional ballistic missiles pose a serious challenge to the survivability of U.S. forces operating in the western Pacific and thus to U.S. force-projection capabilities.

The PLA’s unmatched conventional ballistic-missile arsenal and rapidly evolving military capabilities, combined with a perception of relative invulnerability to U.S. retaliatory strikes, could lure Chinese leaders into a belief that a conventional first strike might deliver temporary PLA regional superiority, during which time Chinese leaders could settle regional disputes coercively, on their terms.⁵⁹ A perception of PLA superiority in a conventional theater strike is not helped by the U.S. military’s apparent lack of a strategy outlining a credible response to an overwhelming PLA conventional first strike.⁶⁰ Without clear U.S. deterrence, the risk of miscalculation only will increase—particularly as the PLA’s confidence in its own capabilities grows in future decades.⁶¹

TOWARD A U.S. CONVENTIONAL ACCESS STRATEGY

The Cold War concept of mutually assured destruction (MAD) maintained relative stability between the United States and the Soviet Union.⁶² Underpinning MAD was the knowledge that both sides possessed credible nuclear second-strike capabilities—the ability to absorb a nuclear first strike and still retain sufficient operable capability to respond with unacceptable devastation.⁶³ This understanding provided a relative degree of stability, since both sides clearly understood their mutual vulnerability and that any preemptive nuclear first strike would receive a response in kind.⁶⁴ Using Cold War deterrence theory as an underlying basis, this article advocates that the U.S. military should consider introducing a conventional access strategy, designed specifically to balance the PLA’s counterintervention strategy. The purpose would be to provide the U.S. military with an improved capacity to deter a PLA conventional first strike, and, if necessary, degrade PLA capabilities with long-range conventional strike forces, to facilitate access for follow-on U.S. forces.

Strategically, a U.S. conventional access strategy would provide Chinese leaders with a clearer understanding of how the U.S. military can impose costs on China, even in the aftermath of a PLA conventional first strike. Operationally, it would increase the permissiveness of the western Pacific for forward-deployed and follow-on U.S. forces. The Department of Defense’s Joint Operational Access Concept (JOAC) states that “in-range combat forces at the beginning of a crisis can facilitate operational access” for other forces in antiaccess/area-denial (A2/

AD) environments.⁶⁵ The primary operational objective of a U.S. conventional access strategy would be to degrade the effectiveness of the PLA's conventional strike capability, as opposed to seeking its complete eradication, so as to facilitate access for U.S. forces entering the western Pacific. The JOAC states that the U.S. military must be able to strike deep into enemy A2/AD capability networks to "disrupt the integrity of the enemy defensive system" and that preferred targets include "logistics and command and control nodes, long range firing units and strategic and operational reserves."⁶⁶ The secondary operational objective would be to deny the PLA unfettered use of communications, logistics, and transport capabilities such as airfields, airports, ports, rail networks, land-based C4ISR networks, and fuel or ordnance stocks. By degrading PLA strike and war-fighting capabilities, forward-deployed U.S. forces could increase the permissiveness of the western Pacific for U.S. forces arriving in theater.

A U.S. conventional access strategy would require four distinct capabilities. A theater-wide passive-defense capability would enhance the ability of forward-deployed U.S. forces to survive initial PLA conventional strikes. A conventional theater-strike capability would enable the U.S. military to begin degrading PLA capabilities immediately at the outset of a conflict, without access to in-flight refueling tankers or usable runways. A theater-recovery capability would restore basic runway access in the aftermath of PLA conventional strikes. A rapid-response capability would allow long-range USAF bombers and fighter escorts to deploy rapidly to U.S. bases in the western Pacific, capitalizing on freshly repaired runways as well as pre-positioned stocks of aviation fuel and conventional earth-penetrating ordnance.

Theater-Wide Passive-Defense Capability

The PLA aims to be capable of striking at intercontinental distances with hypersonic boost-glide (HBG) missiles by 2020 and capable of striking at intercontinental distances with hypersonic aircraft by 2025.⁶⁷ The 2013 Air-Sea Battle Concept (ASBC) states that in a future armed conflict, U.S. bases could be attacked and that "even the US homeland cannot be considered a sanctuary."⁶⁸ Both factors indicate that the United States should consider hardening its infrastructure in the western Pacific and at key locations across Hawaii and the continental United States, so as to deny any adversary a relatively easy way to degrade or deny U.S. force-projection capabilities.

Within this context, a theater-wide passive-defense capability would require improvements in the hardening of critical fixed sites to withstand kinetic threats, and the hardening of critical C4ISR systems to resist nonkinetic strikes. Hardening of critical fixed sites might include building aboveground HS submarine pens, aboveground HS aircraft shelters, and deep-underground HS fuel- and

ordnance-storage facilities, as well as deep-underground HS or HDBT shelters for theater-strike missiles, personnel, and base-repair kits. A 2007 study from the RAND Corporation notes that major U.S. forward bases should protect their in-theater fuel stocks in underground HSs and that stores should be sufficient to enable several weeks of high-intensity air operations.⁶⁹ Hardening of critical C4ISR systems might include the protection of base computer networks and electronic infrastructure from the effects of cyber, electromagnetic pulse (EMP), and high-powered microwave (HPM) weapon effects. At the bare minimum, such improvements in hardened infrastructure should be rolled out across all U.S. bases in the western Pacific. It also might be desirable for the U.S. military to consider selectively rolling out similar hardened infrastructure packages across key Hawaiian and mainland installations, such as Pearl Harbor and San Diego.

Conventional Theater-Strike Capability

A conventional theater-strike capability would allow forward-deployed U.S. forces to respond within minutes or hours of a PLA conventional first strike. A U.S. conventional theater-strike capability would enable the U.S. military to begin degrading PLA strike and C4ISR capabilities at the outset of a conflict, even if U.S. bases, air assets, and naval assets were destroyed or otherwise unavailable. A conventional theater-strike capability should consist of theater-strike missiles, hypersonic undersea strike missiles, ASAT weapons, cyberstrike weapons, and autonomous underwater vehicles (AUVs). As mentioned earlier, the purpose of such strikes would not be to destroy these capabilities outright but to degrade PLA strike and war-fighting capabilities, thereby achieving the JOAC objective of helping ensure access for follow-on U.S. forces attempting to enter the theater of operations.⁷⁰

Theater-Strike Missiles. Theater-strike missiles would enable forward-deployed U.S. forces to execute conventional strikes against heavily defended targets on the Chinese mainland, without support from in-flight refueling tankers or in-theater runway access. Conventional missile strikes could take place in immediate response to, or in the aftermath of, a PLA conventional first strike. For U.S. bases to retain a credible conventional theater-strike capability, theater-strike missiles would have to be stored in hardened facilities.

One option might be road-mobile IRBMs with conventional warheads and a range of 5,500 km, sufficient to strike at Haixi City in Qinghai Province from Guam or the Cocos Islands. Another option might be an HBG missile with intercontinental or intermediate range, consisting of a rocket booster stack and hypersonic glide vehicle (HGV).⁷¹ After the boost phase, the HGV would exhibit a limited ballistic trajectory before sharply reentering the atmosphere, followed by the HGV's transition into a high-altitude glide phase of flight to the intended

target.⁷² The United States is developing an HGV that can be deployed from a modified USAF intercontinental ballistic missile (ICBM) rocket booster.⁷³ Either option could carry a variety of conventional warheads, including penetrators for hardened targets, submunitions for wide-area destruction, and EMP or HPM warheads to cripple electronic infrastructure.

HGVs could exploit hypersonic terminal speeds and combine with existing conventional penetrator technology to threaten PLA HSs. The GBU-39 is a small-diameter bomb that weighs 130 kilograms (kg) and can penetrate over four meters of reinforced concrete.⁷⁴ The GBU-28 is a 2,268 kg bomb capable of penetrating over thirty meters of earth or over six meters of reinforced concrete.⁷⁵ The GBU-57 massive ordnance penetrator (MOP) weighs 13,600 kg and is capable of penetrating over sixty meters of five-thousand-pounds-per-square-inch reinforced concrete.⁷⁶ One option is for theater-strike missile HGVs to deploy existing GBU-39 ordnance, as GBU-28 and GBU-57 ordnance is too large and heavy. The other option is for the United States to develop a new penetrator that combines hypersonic speeds with the GBU-57's penetration technology, which would be sufficient to threaten all grades of HSs up to one hundred meters below the earth's surface. Using GBU-39 technology could provide HBG theater-strike missiles with the ability to neutralize aboveground HSs, such as ordnance magazines and hardened aircraft shelters, and also to inflict heavy damage to paved areas necessary for flight operations. Using the GBU-28 technology could provide theater-strike missiles with the ability to neutralize all grades of shallow-underground HSs and some grades of deep-underground HSs. Using the GBU-57 technology could provide theater-strike missiles with the ability to neutralize most grades of deep-underground HSs.

HBG theater-strike missiles ideally should be capable of being launched from road-mobile TELs. Road-mobile HBG strike missiles would enable forward-deployed U.S. bases, such as Guam, to protect ordnance and launchers from PLA conventional strikes in HDBT facilities. After a PLA conventional strike, the TELs could be driven out of their hardened facilities and launched. Road-mobile weapons also would increase the tactical survivability of deployed TELs, as they would be better dispersed and camouflaged compared with fixed missile batteries.

HBG theater-strike missiles should be used to target the weakest points of PLA hardened facilities and infrastructure. Typically, these will be a hardened facility's communication links to the outside world and the surface-level entrances. The reason for attacking entrances is that every underground hardened facility, by its very nature, will have some surface-level access point. This is a vulnerability that can be exploited by U.S. HBG theater-strike missiles to collapse the entrances to

PLA hardened facilities, sealing all personnel and ordnance inside, or at the very least impeding the movement of PLA assets in and out of the facility. In the case of PLA HSs inside mountains, surface-level entrances would be vulnerable to landslides, which could be triggered by U.S. HBG warhead detonations higher up the mountain. However, the main problem with targeting the entrances of PLA HSs is that they are likely to be camouflaged and “virtually undetectable by current imagery assets.”⁷⁷ Locating a significant portion of PLA hardened facility entrances would require years of dedicated intelligence gathering by the entire U.S. Intelligence Community, using its wide array of collection techniques.

Hypersonic Undersea Strike Missiles. Hypersonic undersea strike missiles would enable forward-deployed U.S. forces to strike at heavily defended but not hardened targets across the Chinese mainland. Prime targets would include but not be limited to Chinese civilian airports, military airstrips, military and civilian ports, electrical power grids, communications nodes, and fuel depots. The purpose of striking at these targets would be to deny the PLA unfettered use of these facilities, which otherwise could be exploited to enhance PLA operations.

Until the project’s apparent termination, the Defense Advanced Research Projects Agency (known as DARPA) was developing the Arclight HBG weapon, designed around the RIM-161 Standard Missile 3 booster stack and designed to achieve full compatibility with strike-length Mk 41 VLS naval batteries. Arclight was built to deliver an HGV payload with a total mass of 45–90 kg out to a range of 3,700 km in less than thirty minutes.⁷⁸ Although budget reports suggest that the Arclight program has been terminated, it does provide insight into the types of capabilities that might be feasible.

Any future hypersonic undersea strike missile would need to be fully compatible with the U.S. Navy’s undersea wide-diameter payload tubes, which measure 2.2 meters in diameter and currently store seven UGM-109E Tomahawk land-attack missiles.⁷⁹ Ideally, a future hypersonic undersea strike missile also would be fully compatible with strike-length Mk 41 VLS cells. Full compatibility with both launching systems would enable the same missile design to be supported by *Arleigh Burke*-class guided-missile destroyers (DDGs), *Virginia*-class nuclear-powered attack submarines (SSNs), and *Ohio*-class nuclear-powered guided-missile submarines.

Undersea towed payload modules (TPMs) are another launch option for future USN undersea strike weapons. TPMs essentially are containers fitted with vertically launched undersea ordnance that would be submerged and towed by submarines into theater.⁸⁰ TPMs are the most attractive option for several reasons. First, TPMs lack the expensive crew life support, hotel loads, fuel storage, and propulsion systems of surface combatants and submarines, and they can be acquired in large numbers. Second, TPMs could be pre-positioned in littoral

waters near Guam years in advance of any conflict. Third, targeting data could be uploaded by the towing submarine into a TPM computer system prior to launch. An onboard TPM computer system would enable the TPM to activate on a time delay, giving the towing submarine time to escape the area before the TPM launch cycle compromised its location. At the outbreak of hostilities, one or more submarines could tow the pre-positioned TPMs to within striking distance of the Chinese mainland.

Antisatellite Strike and Cyberstrike Weapons. ASAT strike weapons would enable the U.S. military to neutralize Chinese military and civilian satellite constellations rapidly.⁸¹ Similarly, cyberstrike capabilities would enable the U.S. military to degrade the effectiveness of PLA C4ISR networks. These targets would be a high priority for the United States since PLA counterintervention capabilities rely on space-based assets to enhance OTH targeting of U.S. bases and moving ships at sea.⁸² In theater, ASAT capabilities are launched from ground-based missile launchers. Out of theater, ASAT capabilities enter by way of destroyer-launched ordnance.

Autonomous Underwater Vehicles. Long-range AUVs with large conventional warheads would enable forward-deployed U.S. forces to strike at Chinese port infrastructure, PLA naval bases, and PLA hardened submarine pens accessed by sea-level undersea tunnels. Notice that only the entrance to a PLA hardened sea-level tunnel would need to be sealed or rendered impassable to generate a mission-kill effect and trap any submarines inside the PLA undersea facility.

Boeing's Echo Voyager unmanned undersea vehicle measures 2.6 by 2.6 by 15.5 meters, is fully autonomous, and has a range of around 12,038 km. It also has a maximum diving depth of three thousand meters and seagoing endurance of several months, is fitted with non-GPS navigation technologies, and is capable of carrying very large payloads of up to eight tons, with a total internal space of 14.75 square meters. The Boeing Echo Voyager uses an inertial navigation system (INS), Doppler velocity logs (DVLs), depth sensors, and various other technologies to navigate independent of GPS satellite navigation constellations. Given the exceptional range, seagoing endurance, diving depth, GPS-independent navigation technologies, and large payload, Boeing's Echo Voyager could be an ideal baseline from which to build an AUV tailored specifically for neutralizing or rendering inoperable Chinese ports, PLA naval bases, and PLA hardened submarine pens, particularly by attacking sea-level tunnel entrances. To ensure the survivability of AUVs from PLA conventional strikes, AUVs should be submerged in littoral waters close to shore, or alternatively stored in hardened underground facilities ashore.⁸³

The PLA has invested extensively in capabilities to deny U.S. forces access to satellite-based C4ISR and GPS navigation systems, particularly given its perception that space-based satellite constellations are a major vulnerability.⁸⁴ Consequently, a credible U.S. conventional theater-strike capability would need to be capable of functioning in denied war-fighting environments. In practical terms, this means that HBG theater-strike missiles, Arclight HBG weapons, ASAT weapons, and AUVs must be capable of executing their respective roles without access to last-minute intelligence from C4ISR, space-based communications systems, and space-based navigation systems. Instead, all these proposed conventional theater-strike capabilities should rely on high-end autonomous navigation systems (ANSs). ANSs might include INs fitted with advanced-inertial-measurement-unit components, DVLS, and advanced computing systems.⁸⁵

Because of the threat that PLA kinetic and nonkinetic strikes pose against C4ISR capabilities, at the outset of a conflict forward-deployed U.S. forces may not have access to late-minute intelligence.⁸⁶ Furthermore, computer networks containing critical information might be disabled or destroyed. As a contingency, the United States could deliver hard-copy intelligence packets with targeting data to forward-deployed forces. This would enable forward-deployed forces to target at least China's fixed land and coastal targets, even if C4ISR is unavailable.

Theater-Recovery Capability

A theater-recovery capability would enable the U.S. military to regain use of its in-theater bases and space-based infrastructure after a PLA conventional first strike. Central to this capability would be the ability to repair damage to bases by relying only on resources forward deployed at each base, resources deployed by assets that would not require runway access, or both. A theater-recovery capability would consist of hardened in-theater facilities, pre-positioned air-base-repair kits and machinery, airdrop repair teams, airships, and microsatellite launches.

Hardened facilities would shield personnel, supplies, repair kits, and reserve air- and missile-defense (AMD) systems from a PLA conventional first strike. Ideally, hardened facilities would be buried deep underground. Airdrop repair teams would enable the U.S. military to repair damaged runways at bases without requiring USAF C-5 and C-17 airlifters to land. The USAF maintains prime base engineer emergency force (Prime BEEF) units that execute on-site repairs, largely using equipment and stores located at each base. Prime BEEF units are supplemented by USAF rapid engineer deployable heavy operational repair squadron engineer (RED HORSE) units, which specialize in repairing air bases under combat conditions. RED HORSE units can be air-dropped into distant locations, and they aim to be capable of operating without support for limited durations.⁸⁷

If current heavy machinery is too heavy or bulky to be air-dropped and a PLA conventional first strike were to render most on-base heavy repair equipment unusable, it would be more difficult for air-dropped RED HORSE teams to repair major damage such as large-diameter craters. One solution might be for the USAF to develop a suite of custom, lightweight, facility-repair machines that could be air-dropped, along with RED HORSE units and supporting stores, into theater from C-5 and C-17 airlifters.

Large-payload airships would bolster repair capabilities without use of runways. An extended-range variant of the Lockheed Martin P-791 hybrid airship could fulfill such a role; the current version has a range of 2,592 km carrying a payload of 21,000 kg.⁸⁸ To reach Guam, an extended-range P-791 would need a range of around 3,300 km to deploy nonstop from Darwin Royal Australian Air Force (RAAF) air base, in northern Australia. Alternatively, an existing P-791 airship could island-hop from Wheeler Army Airfield on Oahu to Midway Atoll (around 2,087 km), from Midway to Wake Atoll (around 1,900 km), and from Wake Atoll to Andersen Air Force Base on Guam (around 2,400 km).

Microsatellite launches would enable the United States rapidly to supplement or replace USAF navigation, communications, and intelligence satellites lost to PLA ASAT strikes.⁸⁹ The airborne launch assist space access (ALASA) vehicle, as deployed from USAF fourth-generation aircraft, could fill this role, given its ability to launch several microsatellites at short notice.⁹⁰

Rapid-Response Capability

In the aftermath of a PLA conventional first strike, runways on Guam and other U.S. islands in the western Pacific likely would be inoperable, at least until repaired by Prime BEEF or RED HORSE teams. After initial repairs were complete, the United States could fly long-range stealth bombers into theater, from Hawaii and the U.S. mainland, so as to execute long-range conventional strikes against hardened targets across the Chinese mainland. The pre-positioning of GBU-57 ordnance in HDBTs on Guam and the Northern Mariana Islands would significantly enhance a USAF rapid-response capability, as the logistics burden would be greatly alleviated.

USAF B-2 Spirit stealth bombers have an unrefueled combat radius of around 5,500 km.⁹¹ However, the USAF inventory contains only twenty B-2s, as the acquisition program was reduced significantly from an original order of 132 aircraft.⁹² The USAF also is replacing its legacy B-1B and B-52H bomber fleets with one hundred B-21 Raider long-range stealth bombers.⁹³ However, the B-21 Raider could have an unrefueled combat radius as short as 4,600 km—significantly shorter than the B-1B at 6,900 km and the B-52H at 8,100 km.⁹⁴ Assuming that the B-21 Raider has a combat radius of at least 5,500 km, both

B-2s and B-21s would be capable of executing deep strikes across the Chinese mainland without access to in-flight refueling—as deep as Haixi City from Guam or the Cocos Islands. Both the B-2 and B-21 can deliver the enormous GBU-57 MOP, which measures eighty centimeters in diameter by 6.25 meters in length and weighs 13,600 kg per bomb. The B-2 is capable of carrying two GBU-57 MOPs, one in each internal weapons bay.⁹⁵

If a PLA conventional first strike denied use of runways on Guam and the Cocos Islands, USAF B-2s and B-21s could operate from the RAAF Learmonth air base, in western Australia, outside the range of most PLA conventional strike capabilities.⁹⁶ Assuming the B-21 Raider has an unrefueled combat radius of 5,500 km, USAF B-2s and B-21s operating from RAAF Learmonth could be refueled from RAAF in-flight refueling tankers orbiting the Cocos Islands, followed by strikes out to 5,500 km. The return journey would be the mirror opposite, with in-flight refueling above the Cocos Islands before returning to RAAF Learmonth. The advantage of this option is that it would depend only on in-flight refueling tankers and RAAF air bases outside the range of most PLA conventional strike capabilities, and thus would provide a robust contingency plan.⁹⁷

However, a fleet of 120 long-range stealthy bombers (twenty B-2s and one hundred B-21s) is unlikely to meet the U.S. military's operational needs during a China-U.S. conflict, for several reasons. First, the high number of targets across the Chinese mainland, exacerbated by the significant distance from Guam, will reduce drastically the fleet-wide sortie rate—the number of targets that a bomber can strike per twenty-four-hour period.⁹⁸ Second, only a fraction of the entire fleet will be available for combat operations, as the rest will be needed for training, maintenance, and reserve functions.⁹⁹ For instance, a combat-coded force of 160 B-21 Raiders would require an overall fleet of two hundred aircraft.¹⁰⁰ Third, the B-2s and B-21s would play a disproportionate role in the air war portion of any China-U.S. conflict.¹⁰¹ This is because B-2s and B-21s would be the only aircraft in the USAF inventory with sufficient stealth to penetrate advanced PLA air defenses; sufficient unrefueled range to strike at the Chinese mainland from Guam, without depending on in-flight refueling tankers; and sufficient payload to carry the GBU-57 MOP for neutralizing PLA HSs. In 2015, the Mitchell Institute for Aerospace Studies found that the USAF might require a total fleet of two hundred stealthy long-range bombers, particularly given reduced sortie rates, combat coding, payloads, and the risk of force attrition.¹⁰²

INVENTORY ESTIMATES

During any armed conflict nothing ever works perfectly or goes entirely according to plan. As Clausewitz once stated, this concept of “friction” means that the

outcome of military operations is inherently uncertain and that any element of a plan can fail.¹⁰³ In the cases of conventional theater-strike, theater-recovery, and rapid-response operations, the United States would need to consider how many stores of various types are sufficient to respond to operational uncertainties that might arise. For instance, conventional theater-strike capabilities could exhaust in-theater ordnance stores, theater-recovery capabilities could run out of base-repair kits, and a rapid-response capability could run out of in-theater ground-penetrating ordnance.

To insulate against operational uncertainties, U.S. forward bases would need large pre-positioned inventories of theater-strike missiles sufficient for at least two strikes per PLA target. This estimate of two strikes per PLA target is based on the RAND Corporation's assessment that two weapons per hard target would be needed to generate a kill probability of greater than 90 percent.¹⁰⁴ In addition, the U.S. military would need to retain a strategic reserve of ordnance, in the event that in-theater stores were exhausted, as well as for use in other global contingencies.

For the theater-recovery capability, U.S. forward bases likely would need very large inventories of base-repair kits and ALASA ordnance with microsatellite payloads pre-positioned and sufficient to execute two full base repairs or ALASA salvos, plus strategic reserves at mainland facilities for an additional four full base repairs and four ALASA salvos. These reserves might be necessary if the PLA executes persistent strikes and ASAT attacks throughout a protracted conflict.¹⁰⁵

A rapid-response capability might need very large inventories of pre-positioned GBU-57 MOP ordnance and aviation fuel, in shallow-underground HS facilities at U.S. forward bases. This might require sufficient ordnance for two strikes per PLA target, plus a strategic reserve for further combat sorties or use in other global contingencies.

ADVANTAGES OF A U.S. CONVENTIONAL ACCESS STRATEGY

A conventional access strategy would provide six major advantages. The first is that it would deny the PLA a conventional first-strike capability against U.S. bases and forward-deployed forces, through passive-defense measures, a conventional theater-strike capability, a theater-recovery capability, and a rapid-response capability. With passive hardening of critical military infrastructure, a greater portion of U.S. forces might survive the initial waves of PLA conventional strikes. Surviving in-theater forces could then execute land-based, undersea, ASAT, and AUV strikes against a variety of PLA targets, across the Chinese mainland and in orbit. This would enable the U.S. military to begin degrading the PLA's capabilities at the outset of a conflict, enabling theater-recovery capabilities to operate more

effectively. With airfields repaired, B-21 and B-2 stealth bombers could then be flown into theater to commence strikes against PLA targets across the Chinese mainland.

The second advantage is that degrading PLA conventional strike capabilities at the outset of a conflict would increase the permissiveness of the entire theater for other force-projection assets. Undermining the PLA's capability to execute ASBM and ASCM strikes against USN task forces and logistics ships would provide USN assets with greater freedom of action and enhanced survivability. With intense and persistent conventional strikes, PLA capabilities might be degraded sufficiently to enable USN aircraft carriers eventually to operate with relative impunity close to the Chinese coastline, significantly increasing the sorties generated by carrier air wings.

The third advantage is that it would buy time for U.S. force-projection capabilities to be mobilized, marshaled, and deployed to the western Pacific. With significant air and naval assets deployed globally, the military would require time to redeploy and logistically support a significant force in theater. For example, a 1993 General Accounting Office report stated that with a total projected force of twelve USN aircraft carriers, six carriers could deploy with thirty days' notice and nine carriers with sixty days' notice.¹⁰⁶ Equivalent times likely would be required to deploy or redeploy the full range of U.S. air, land, and sea assets necessary to execute theater-wide, joint-service campaigns in the Pacific.

The fourth advantage is that it would focus the military's attention on critical capabilities needed to enhance the survivability and operational effectiveness of traditional force-projection assets: tactical aircraft, in-flight refueling tankers, aircraft carriers, surface combatants, logistics ships, and sealift ships. For instance, prioritizing long-range strike capabilities not dependent on U.S. bases or in-flight refueling would in turn drive the military to prioritize conventional theater-strike missiles, undersea-launched hypersonic missiles, ASAT and cyberstrike weapons, and AUVs, combined with a large fleet of B-21s with range similar to the B-2 Spirit.

The fifth advantage is that a credible U.S. conventional theater-strike capability would force the PLA to reevaluate its allocation of resources to offensive versus defensive systems. The PLA might be driven to divert sizable defense funding to harden its vulnerabilities further across the vast Chinese mainland and improve costly AMD systems. This would reduce the funding available for the PLA to pursue offensive war-fighting systems.

The sixth advantage is that a U.S. capacity to execute a conventional theater strike from the Cocos Islands would complicate significantly the PLA's operations to defend the Chinese mainland. During a South China Sea or East China Sea crisis, the PLA could deploy most of its AMD systems along China's east and

southeast coastlines. However, if the Australian government allowed the U.S. military to operate conventional B-21s or HBG theater-strike missiles from the Cocos Islands, the PLA would have to defend a significantly greater area. For instance, PLA AMD units would have to be more thinly dispersed along China's vast coastline as well as along the land borders of its Qinghai, Sichuan, and Yunnan provinces. Consequently, U.S. strike bombers and theater-strike missiles would have an improved capability to penetrate PLA AMD networks and neutralize the intended targets.

LIMITATIONS OF A U.S. CONVENTIONAL ACCESS STRATEGY

A conventional access strategy would incur seven major limitations.

Homeland Sanctuary

The first limitation is the vexing issue of homeland sanctuary: the concept that nuclear powers refrain from attacking the homelands of other nuclear powers, to avoid triggering a nuclear response. The argument is that in a China-U.S. conflict each side would initially avoid strikes against the other's homeland, even with conventional ordnance, to minimize the risk of nuclear escalation.¹⁰⁷ It has been pointed out that this asymmetry could allow China to strike at U.S. territories in the western Pacific, such as Guam and the Northern Marianas, without retaliatory U.S. strikes on the PLARF and Chinese mainland—at least initially.

Four problems arise out of this argument. First, forward-deployed U.S. forces at overseas territories such as Guam and the Northern Marianas are likely to be heavily inundated by barrages of PLA ordnance in the initial phase of any China-U.S. conflict. Such PLA strikes are likely to inflict very heavy losses in terms of personnel and combat assets and other matériel.¹⁰⁸ In such a scenario, the United States might inadvertently honor homeland sanctuary as a direct result of successful PLA strikes degrading U.S. in-theater capabilities. However, high losses also would trigger significant pressure from Congress, cabinet secretaries, senior officials, and the general public for the president to authorize robust conventional strikes against targets across the Chinese mainland.

Second, even if the United States suffered very heavy initial losses in personnel and matériel, it eventually would execute high-intensity conventional strikes across the Chinese mainland, if U.S. force-projection assets were able to deploy into theater. For instance, the JOAC, which contains the ASBC and Gaining and Maintaining Access Concept (GMAC), aims to execute high-intensity, war-fighting operations and strikes against the homelands of A2/AD adversaries.¹⁰⁹ Notice also that the GMAC explicitly states that U.S. Army and Marine Corps special forces might be inserted covertly into an adversary's homeland to "provide human contact to complement other intelligence."¹¹⁰

Third, the U.S. Department of Defense openly acknowledges that the military must be ready to execute joint military operations against A2/AD adversaries “at the outset of a contingency to avoid delays for buildups.”¹¹¹ The JOAC states that “joint forces will attempt to penetrate into the depth of an enemy’s anti-access/area-denial defenses . . . to disrupt the integrity of the enemy defensive system.”¹¹² The ASBC states that deep strikes against A2/AD adversaries have the objective of “disrupting, destroying or defeating an adversary’s A2/AD capabilities.” The ASBC also states that “even the US homeland cannot be considered a sanctuary.”¹¹³ The deep-strike objectives of Pentagon operating concepts and the notion of covert special forces teams operating across the Chinese mainland, combined with the stated need to be ready at the outset of a conflict and open acknowledgment that the U.S. homeland could be targeted, strongly suggest that the U.S. military does not plan on granting the PLA homeland sanctuary during a China-U.S. conflict.

Fourth, the United States, owing to its geographic distance from the western Pacific, could be seen by global public opinion as a largely unnecessary target. This is in stark contrast to the Chinese homeland, which out of necessity would be seen as a valid target for conventional U.S. strikes, since the vast majority of PLA conventional-strike capabilities are land-based ballistic missiles and long-range bombers. Consequently, if the PLA executed conventional strikes against the U.S. mainland, particularly in a conflict in which China was viewed globally as the aggressor, then global public opinion could strengthen the scale of coalition forces levied against the PLA. This would be true particularly in the case of U.S. allies and security partners that otherwise might opt out of direct participation in a China-U.S. conflict. As the RAND Corporation has noted, in a short conflict third parties would make little difference, but in a more protracted conflict between China and the United States the implications could be significant.¹¹⁴ Despite these counterarguments, the Chinese government still might believe that the PLA could strike at U.S. forces in the western Pacific with minimal risk of conventional strikes against the Chinese mainland, given an asymmetry in homeland sanctuary.

Treaty Limitations on Aircraft

The second limitation is that the New Strategic Arms Reduction Treaty (New START) severely handicaps the acquisition of B-21 Raider long-range strike bombers, since the aircraft will be capable of delivering both conventional and nuclear ordnance.¹¹⁵ New START requires U.S. and Russian nuclear arsenals not to exceed 1,500 nuclear warheads and eight hundred nuclear delivery vehicles, with seven hundred deployed and one hundred not deployed.¹¹⁶ Under New START, nuclear delivery vehicles are defined as ICBMs, submarine-launched

ballistic missiles, and heavy bombers.¹¹⁷ A nuclear bomber is defined by New START as an aircraft that has a maximum one-way range exceeding eight thousand kilometers and that could carry nuclear weapons.¹¹⁸ The problem is that a B-21 Raider with an unrefueled combat radius of 5,500 km, as needed to strike deep into the Chinese mainland from Guam, would give the aircraft a total range of around eleven thousand kilometers. Given that the B-21 will be capable of delivering both nuclear and conventional ordnance, it will be counted under New START. Consequently, the challenge for the USAF will be finding a way to increase the size of its combat-coded conventional long-range stealth bomber force without violating New START.

One solution would be to produce a nonnuclear-capable variant of the B-21, since nonnuclear variants would not count. According to the treaty, a nuclear bomber is no longer counted once it has been permanently modified to be incapable of delivering nuclear ordnance and is visibly distinguishable from nuclear-capable variants.¹¹⁹ Modifications include ensuring that all mechanisms of the internal weapon bays are “incapable of employing nuclear armaments.”¹²⁰ Other modifications would need to be made to the external design of a conventional B-21 variant to render it visibly different from the nuclear variant.¹²¹ With a conventional-only B-21 variant, the United States theoretically could produce as many conventional B-21s as it requires without breaching New START. Another solution might be to reduce modestly the USAF’s inventory of nuclear-armed ICBMs, from four hundred under New START to three hundred.¹²² This would allow the USAF to order a total of two hundred B-21 Raiders and still comply with New START. Ultimately, either solution would increase significantly the number of combat-coded B-21s, greatly enhancing the capacity of the USAF to execute long-range strikes across the Chinese mainland from Guam. Moreover, increasing the B-21 Raider production order to two hundred or more units would drive down acquisition costs by distributing fixed research, development, and other costs over a larger production run.

Treaty Limitations on Weapons

The third limitation is that the acquisition of conventional theater-strike HBG weapons could breach New START, the Intermediate-Range Nuclear Forces (INF) Treaty, or both. Under New START, an ICBM is defined as a nuclear-capable system that travels for most of its flight path in a ballistic trajectory, with a range exceeding 5,500 km.¹²³ The INF Treaty requires that U.S. and Russian militaries dismantle all ballistic missiles with ranges between 500 and 5,500 km. The INF Treaty defines a ballistic missile as a weapon that follows a ballistic trajectory for the majority of its flight path.¹²⁴

However, HBG weapons do not follow a ballistic trajectory for the majority of their flight path and thus would not be subject to limitations under New START or the INF Treaty.¹²⁵ Consequently, the U.S. military could develop an HBG weapon with a range of 5,500 km or greater, yet avoid breaching either treaty.

First-Strike Risk

The fourth limitation is that launching one or more HBG weapons could be misconstrued by the PLA, Russia, or both as a U.S. nuclear first strike. This risk has been discussed since the conceptualization of hypersonic boost-glide systems, because they depend on long-range rocket boosters similar to those that nuclear-armed ballistic missiles use.

However, the nonballistic flight path of hypersonic boost-glide weapons, plus a brand-new rocket booster design, would make a U.S. hypersonic boost-glide system appear distinct on Chinese and Russian nuclear early-warning systems.¹²⁶ If the United States were able to assure China and Russia that its hypersonic boost-glide systems were used exclusively for conventional payloads, this would further reduce the likelihood of HBG-weapon use being misinterpreted as a nuclear first strike.

Potential Nuclear Aggression

The fifth limitation is that striking at the PLA's conventional ballistic-missile manufacturing and maintenance facilities, storage facilities, and launchers could be misconstrued as an attempt by the United States to degrade the PLA's nuclear deterrent.¹²⁷ This risk would arise because U.S. theater commanders would be unable to distinguish readily between nuclear and conventional versions of the PLA's ballistic-missile arsenal, particularly if U.S. C4ISR systems were degraded by PLA ASAT and cyber strikes.

This problem could be solved through a U.S.-China bilateral agreement for the PLA to separate clearly its nuclear ballistic missiles from its conventional arsenal and a mutual commitment to exclude all nuclear deterrents from targeting. The net result would be a reduced risk of U.S. conventional strikes inadvertently targeting PLA nuclear capabilities.

Hardened Structures

The sixth limitation is that a U.S. conventional access strategy might not overcome the PLA's extensive investments in hardened structures. This is a very real possibility. To paraphrase Moltke, no plan, however good, survives contact with the enemy.¹²⁸ However, the measures proposed under a U.S. conventional access strategy would provide a reasonable ability to neutralize PLA hardened facilities, such as underground tunnels and sea-level submarine pens. This conventional access strategy prioritizes advanced penetrator ordnance delivered by HBG theater-strike missiles and B-2s and B-21s, as well as AUVs armed with

large conventional warheads for sea-level tunnels and submarine pens. While the penetration capabilities of all ordnance might not be able to overcome PLA HDBTs, such as tunnels buried deep within mountains, what this ordnance could do is target the most vulnerable points of these structures. For instance, these weapons could target external communications links and surface-level entrances. By targeting surface-level entrances of PLA hardened facilities, U.S. penetrator ordnance could be sufficient to seal the structures from the outside world, or at the very least impede the movement of traffic in and out of the facilities. The advantage of targeting surface-level entrances is that every underground hardened structure must be accessible from the surface, making them a vulnerability of all PLA HSs and HDBTs that can be exploited.

Survivable and Capable Force-Projection Capability

A seventh limitation is that the United States might consider fielding a highly survivable and capable force-projection capability designed to achieve the same objective as the proposed conventional access strategy, just with less risk of escalation. While it is true that the United States *could* field a highly capable and survivable force-projection capability, funding levels will determine whether it will do so.

To field a force structure capable of defeating A2/AD adversaries, the U.S. military would need to invest in many of the nine following critical capabilities: arsenal ships; additional future guided-missile frigates (FFG-Xs); additional *Virginia*-class SSNs; a large number of AUVs; a new, sixth-generation, long-range, carrier-based strike aircraft; a new, sixth-generation, long-range, land-based air-superiority fighter; additional B-21 Raiders; a new, stealthy C3 intelligence, surveillance, and reconnaissance (C3ISR) aircraft; and a new, stealthy, in-flight refueling tanker (see table 2). The numerous new research, development, and acquisition programs needed would cost hundreds of billions of dollars, even without accounting for significant additional orders of DDGs, FFG-Xs, SSNs, and B-21s.

In short, the United States can field a highly survivable and capable counter-A2/AD force—it is just a question of the funding and political willingness to do so. Conversely, a U.S. conventional access strategy aims to achieve similar power-projection objectives with less of a burden to the U.S. taxpayer, or fewer seismic departures from the planned military force structure, or both.

The PLA's counterintervention capabilities could be used to execute a conventional first strike against U.S. bases and forward-deployed forces west of Hawaii. The Chinese leadership could be convinced that a decisive conventional first strike, in conjunction with other PLA capabilities, would provide the PLA with

TABLE 2
U.S. COUNTER-A2/AD FORCE-PROJECTION CAPABILITIES

Capability	Description
Arsenal ships	The U.S. Navy could consider a new class of large-displacement surface ship, armed with 288–512 strike-length Mk 41 vertical launching system cells and a larger, more capable ballistic missile–defense radar than the AN/SPY-6.
Additional FFG-Xs	The U.S. Navy could consider expanding its order of FFG-Xs to serve as capable surface combatant escorts for convoys of fleet oilers and dry-cargo and resupply ships, as would be needed to sustain high-intensity combat operations in the western Pacific.
Additional nuclear-powered attack submarines (SSNs)	The U.S. Navy could consider accelerating the acquisition of Virginia Payload Module–equipped SSNs, particularly given the projected undersea strike shortfall when the fourth <i>Ohio</i> -class nuclear-powered guided-missile submarine is retired in 2028. ^a
Autonomous underwater vehicles (AUVs)	The U.S. Navy could consider acquiring AUVs armed with lightweight torpedoes designed to deny maritime zones to PLA surface and subsurface forces.
Sixth-generation carrier-based aircraft	The U.S. Navy could consider truncating its order of F-35Cs in favor of developing a sixth-generation carrier-based, long-range strike and air-superiority aircraft.
Sixth-generation land-based aircraft	The U.S. Air Force could consider truncating its order of F-35As in favor of developing a sixth-generation land-based, long-range air-superiority aircraft with sufficient unrefueled range to escort B-21s during deep-penetration strikes.
Additional B-21s	The U.S. Air Force could consider retaining its planned fleet of one hundred nuclear-capable B-21s, plus a significant order of conventional-only B-21s, perhaps on the order of three to four hundred aircraft.
Stealthy C3ISR aircraft	The U.S. Air Force could consider developing a stealthy, very high-altitude, long-range C3ISR aircraft, capable of replacing satellite communications networks during a conflict.
Stealthy in-flight refueling tanker	The U.S. Air Force could consider developing a stealthy, long-range in-flight refueling tanker. This aircraft should be fitted with a tail ramp to enable variants to support the covert insertion and sustainment of special operations forces deep inside hostile territory.

Note:

a. Gunzinger and Dougherty, *Outside-In*, p. 85.

temporary regional superiority, giving China a rare window of opportunity to settle regional disputes through coercion and on terms favorable to China. Any such perception would undermine seriously the U.S. military's ability to deter Chinese aggression in the western Pacific.

The solution is not for the U.S. military to build a larger force structure but rather for it to rearrange its thinking around a conventional access strategy. This would require the U.S. military to acquire four critical capabilities: a theater-wide passive-defense capability, a conventional theater-strike capability, a

theater-recovery capability, and a rapid-response capability. Strategically, a conventional access strategy would accomplish several things: it would deny the PLA a conventional first-strike capability, increase the permissiveness of the western Pacific for follow-on U.S. forces, buy valuable time needed to mobilize and deploy U.S. power-projection assets, focus the military's attention on critical capabilities, and impose resource constraints on the PLA. However, a conventional access strategy would require the United States to think seriously about developing and assigning a new rocket booster exclusively for use by hypersonic boost-glide systems, as well as to assure Russia and China that U.S. HBG weapons would carry only conventional payloads. Furthermore, the United States and China would have to give serious consideration to entering into a bilateral agreement for the PLA to separate clearly its nuclear ballistic missiles and for both parties to exclude nuclear deterrents from targeting.

Even with its limitations, a U.S. conventional access strategy would return the China-U.S. strategic deterrence calculus to a more stable equilibrium. One hopes that this would deter Chinese leaders from seeing a conventional first strike as a credible option. Pursuing a U.S. conventional access strategy would be a political decision for the president and Congress. Such a decision would have to take into account numerous dimensions, including military, political, fiscal, diplomatic, and technological maturity considerations. Such discussions fall beyond the scope of this article but provide ideal areas for future research.

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WARGAME BUSINESS

Wargames in Military and Corporate Settings

Shay Hershkovitz

Wargames have a centuries-long history in military circles, but the world of business only adopted their fundamental principle in the late 1950s.¹ In recent decades, both corporate and military thinkers have renewed their interest in simulation games. *Gamification* (incorporating game elements into more-serious activities) and “serious video games” have given wargaming a more significant place in both business and military simulation discussions.

Wargames and business games do have some dissimilarities in their concepts and methodologies, but they also have similar strategic environments, planning, and decision-making processes. Therefore, the analysis of business game case studies can enrich the practice of wargames in the military world, and vice versa.

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This article clarifies the similarities and the analogical relationship between the fields of war and business, addressing three critical constructs (a) to illustrate the historical shift of wargames from the military world to the corporate one; (b) to explore the shared challenges facing strategic planners, which wargames and business games can address and overcome; and (c) to present three business games in a corporate setting. The article then will describe the lessons identified from these three case studies and how these lessons can help strategic planners from both the military and the business worlds overcome challenges.

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A BRIEF HISTORY OF WARGAMES

The earliest wargames (e.g., *chaturanga* [chess, around AD 280–550] and *wei-hai* [Go, around the third or fourth century BC]) were recreational, enabling simplified forms of operational thinking. In the wake of the French Revolution, as well as the institutionalization and modernization of armies in the seventeenth and eighteenth centuries, militaries needed simulation-based thinking that emulated the forms, factors, and functions of battles and campaigns, with critical nodes and decision points. This led to sophisticated wargames that simulated military forces, variable topography, and even maritime combat using tabletop frameworks. The Prussians developed the most systematic methodology in the *Kriegsspiel* (wargame), allowing them to test their battle plans as well as educate their armed forces.²

At the close of the nineteenth century, wargames became a global phenomenon as the Russians, Japanese, French, British, and Americans assimilated this practice into military planning.³ In 1905, German chief of the Great General Staff Alfred von Schlieffen conducted a broad-ranging wargame that tested his plan for a decisive attack of France by way of Belgium.⁴ After World War I, the Germans conducted an investigation into their defeat, concluding that wargames must include political processes to simulate better the strategic environment in which armies function. On that basis, Germany began pioneering national wargames in which civilians (e.g., politicians, diplomats, and journalists) participated for the first time. The Wargame Branch of the German military conducted the first political-military (pol-mil) game in 1929.⁵

German chancellor Adolf Hitler ended Germany's pol-mil games, seeing them as an unnecessary intellectual exercise that failed to incorporate such variables as ideology and intuition. Nevertheless, the Wehrmacht (unified armed forces of Nazi Germany from 1935 to 1946) continued to refine Germany's use of wargames, including a simulation of the invasion of Poland, the occupation of the Soviet Union, and an Allied invasion of Normandy. Almost all major countries involved in World War II conducted strategic and operational wargames.⁶

Indeed, similarly to other military and technological development, World War II was the catalyst behind wargames' leap forward. As Joseph Wolfe has stated, "Modern business gaming came about through the merging of developments in wargames, operations research, computer technology, and education theory."⁷ Richard D. Duke has argued that "World War II spawned at least five developments which have been woven into the fabric of gaming: computers, operations research, the mathematical theory of games, simulation, and the early business games."⁸

After World War II and as the Cold War progressed, wargame development accelerated in the United States, especially after the RAND Corporation began

to “game out” crisis scenarios, particularly nuclear crises, with the participation of senior U.S. officials.⁹ This heralded a return to the clear separation between military wargames and political strategic games. Although not mutually exclusive, the former emphasized the use of military power and tended to focus on operations, while the latter focused on grand strategy, in which military force was one of many potential tools.

There are examples from the business sector as well. The former Soviet Union conducted a hand-scored simulation dedicated to businesspeople in 1932, mainly for the purpose of training managers of the Ligovo typewriter factory, and Japan pioneered the field of simulation games dedicated to economic studies and business.¹⁰ The onset and subsequent disasters of World War II put an end to these business gaming experiments in both countries.

Following World War II, interest quickly grew in the theory of organization, along with some developments in game theory and its application to decision-making.¹¹ Therefore, it is not surprising that in 1957 the American Management Association developed and conducted one of the first business games—the *Top Management Decision Simulation*—followed by the *Top Management Decision Game*.¹² In 1958, the *Harvard Business Review* published a paper assessing the relevance of wargames to the business world.¹³ The journal’s prominence meant that the practice received wide exposure, and business wargames gained additional momentum throughout the 1960s. Universities, research institutes, and independent companies developed hundreds of games in fields such as management, business operations, finance, organizational theory, psychology, accounting, and marketing.

Through the mid-1980s, business games focused on strategic issues and matters relating to competitive intelligence, including the behavior of business players such as competitors and consumers, the evaluation of case studies and strategic responses, and the robustness of initial work plans.¹⁴ This revolution culminated in larger consulting firms, such as McKinsey & Company and Booz Allen Hamilton, incorporating gaming methodologies into their customer offerings.¹⁵

In recent decades, corporations have turned again to wargames, inspired by the following factors:

- The benefits of games such as these are clear, even to industries long considered too important to be influenced by games. The increasing availability of advanced computing power and information technologies also contributes to the success of business games.
- Wargames are perceived as being grounded in the many approaches to strategic business planning popularized since the late 1990s.¹⁶

- Wargames, and by extension business games, are well suited to making decisions in a strategic environment in which leaders must assess a wide range of possible scenarios, under varied circumstances.¹⁷

Today, the two major types of business games are competitive scenarios, such as the entry of a market competitor or the outbreak of a crisis, and structured frameworks to prepare for complex negotiations.¹⁸ Games also can be functional or general. Functional games assess specific aspects of a value chain, while general games take a strategic perspective relative to current and future markets.¹⁹ General games can be either closed games, using software and algorithms to estimate market behaviors in response to participants' actions, or open games, more similar to workshops, wherein the dynamics among participants reflect the possible range of market conditions.²⁰ The most popular format for business games is role play, wherein participants compete with each other in teams.

In parallel, militaries around the world continue to use and improve their wargaming techniques, further developing their extensive body of knowledge. In 2015, U.S. Deputy Secretary of Defense Robert O. Work committed the Department of Defense (DoD) to overhauling its approach to wargaming to encourage innovation across the department; he imposed a five-year target of using wargames to improve operational planning.²¹ In 2016, DoD requested more than \$55 million for wargaming for the next fiscal year, and more than \$525 million over the five-year Future Years Defense Program spending plan. As a senior CNA (formerly the Center for Naval Analyses) wargame expert stated, "Wargaming has gone through periods of popularity and disfavor, but I have never seen in the past 40 years any situation like this with the senior leadership."²²

There is, therefore, no doubt that the public and private sectors can share each other's experience, methodology, and lessons learned to solve both their shared and their unique problems.

THE MILITARY AND THE CORPORATION: SHARED PROBLEMS FOR STRATEGIC PLANNERS

Examining the definitions of a wargame in each domain uncovers similarities and ways to compare the business environment to that of the military. DoD defines a wargame as a "simulation, by whatever means, of a military operation involving two or more opposing forces, using rules, data, and procedures designed to depict an actual or assumed real life situation."²³ Similarly, in his classic book, *The Art of Wargaming: A Guide for Professionals and Hobbyists*, Peter P. Perla defines a wargame as a "warfare model or simulation whose operation does not involve the activities of actual military forces, and whose sequence of events affects and is, in turn, affected by the decisions made by players representing the opposing sides."²⁴

As for business games, the definitions reveal some similarities to military games. Marco Greco and his coauthors state that a wargame in the business world is “a game with a business environment that can lead to one or both of the following results: the training of players in business skills (hard and/or soft) or the evaluation of players’ performances—quantitatively and/or qualitatively.”²⁵ According to Samuel Eilon, business simulation games have a threefold purpose: to be used as training tools (in which players must face the consequences of their decisions), to provide an overall view of corporate strategic functions, and to simulate market trends to improve a player’s capacity to face changes.²⁶

All these definitions describe an activity that simulates real-world conditions. A wargame in this context is serious, “a game whose central purposes are not recreational,” and represents “an exercise of voluntary control systems in which there is an opposition between forces, confined by a procedure and rules in order to produce a disequibrial outcome.”²⁷

Despite the differences between environments, military and business leaders encounter similar challenges, particularly those related to analysis of an organizational setting, strategic planning, and implementation.²⁸ Simulations and games are an effective tool for overcoming these challenges, even partially, in both worlds—and gaming experiences in either world produce relevant insights for the other.

Two types of strategic planning challenges are those resulting from individual and group cognitive limitations or failures, and those arising from organizational structures, procedures, and behaviors.

Cognitive Limitations

Planning and decision-making require an accurate appreciation of one’s strategic environment. The environment in which businesses (and militaries) operate, however, features high complexity, rapid change, and imperfect information. The cognitive capacity of individuals and groups to understand such information-intensive yet ambiguous situations is limited. Moreover, time pressure often does not allow for both rapid assessment and effective decision-making.

Human perception is an active process in which individuals and groups build their own versions of reality on the basis of assumptions and conceptions.²⁹ The “distorted perception” effect skews the process, however, so that decision makers are not aware of the basic assumptions and conditions that shape their thinking.³⁰

Cognitive biases often arise out of distorted perceptions and systematic patterns or tendencies that cause errors in perception, memory, judgment, or thought. All individuals employ rules of thumb that help them to process information quickly and make decisions accordingly.³¹ These shortcuts allow people and organizations to cope in uncertain environments, but they

nonetheless lead to systematic biases.³² Such individual and group biases often are accompanied by chronic organizational problems, and the combination can be devastating.

Barriers Caused by Organizational Structures, Procedures, and Behaviors

A failure to convey information accurately is a strategic threat to any organization, with the knowledge necessary for effective strategic planning often split across separate organizational functions.³³ The first business games were developed precisely to allow future managers to discover all the functions of the firm, the interdependence of those functions, and the interrelations among the different functions (marketing, finance, accounting, sales and purchases, etc.). Furthermore, different people and functions have varied perspectives and interpretations of the operating environment and of how to achieve objectives, or even what those objectives are.

A good example of this dynamic can be seen between intelligence officers—both military and civilian—and elected officials. Elected policy makers generally lack professional knowledge regarding intelligence as a field and regularly believe that intelligence officers tend to expand, rather than reduce, the level of uncertainty. In most cases, intelligence officers lack the knowledge of both policy issues from the policy makers' perspectives and the constraints under which they operate.³⁴

In the business world, the chief strategy officer is analogous to the intelligence officer, and the chief executive officer to the policy maker—yet the way players deal with complex problems remains the same. Both realms, and both types of roles, are rooted in a somewhat chaotic, unpredictable, and uncertain environment; in both realms there is an inherent tension between the desire to reflect reality fully and the need to shape reality actively.

This lack of collaborative culture has a negative effect on organizations. Organizational cultures that reinforce the concept of the “expert” and promote ownership of knowledge at the expense of shared understanding create islands of information and expertise that are not distributed through organizational channels. The knowledge produced on these islands could be valuable, sometimes even critical, but unless it is shared it is practically worthless. Where knowledge is power, those who give it up will lose, and those who do not have it are weak. This kind of corporate culture can cause professional jealousy and friction, reducing the organization's competitive effectiveness, and can create arrogance, rigidity, and impatience among decision makers, which restricts their ability to view a company's situation in its entirety. In contrast, wargames encourage the exchange of knowledge and can help overcome such problems.

THREE CASE STUDIES FROM THE ISRAELI BUSINESS SCENE

This section will examine three case studies of business games in the Israeli business sector in which the author participated firsthand. They convert the theoretical into an example-based data set and demonstrate the use of wargaming methodologies in different contexts. The studies also describe the outcomes of these games and how organizations have incorporated these insights in their strategic planning. The resulting implications for military planners are then presented and discussed.

Water Drops: The Entry of a New Competitor into the Household Appliance Market

A household appliance company learned that a new competitor was planning to enter and change the market within six to eight months. Until that point, the original company had dominated its smaller competitors. The new challenger, however, had significant financial backing from a parent company that allowed it to enter the market aggressively and absorb losses over time. The original company's managers sensed that this new competitor would deliver a major blow, but they struggled to identify the specific implications, including how it would affect the company, its existing competitors, and consumer spending patterns.

The primary objective of the business game, which the author led, was to provide participants with a broad understanding of the new operational environment, which in turn demanded a new business strategy for the household appliance market. A second objective was to formulate general contingency guidelines on how to respond to the new competitor.

The author created this business game and led its execution in late 2012. My team created a two-phase game, with each phase having a different format to satisfy different objectives. In the first phase, participants received a description of the most likely scenario (on the basis of existing knowledge) to follow the new company's entry into the market. They then analyzed the new strategic environment and various scenarios that might develop. In the second phase, the emphasis was tactical. Participants worked in groups, receiving a concrete scenario relating to the competitor's products, pricing, or expected sales methods and channels. Each group developed a set of responses to its given scenario.

The business game began just days after the media had reported the details of the expected entry of the new competitor. These details troubled the original company's management, and an atmosphere of urgency surrounded the game environment. At the end of the series, participants were equipped with strategic and operational principles to cope with future short- and long-term challenges. The participants went through a cognitive journey, discussing how potential strategic

scenarios might unfold and testing potential responses. They then compared the insights gained in the game with their actual capacities, plans, and procedures, illuminating the areas that required update or change.

Players unanimously agreed on the need to devise and implement an active policy rather than a reactive one and to create an environment in which the new competitor would operate under unfavorable conditions. At the end of the second stage, participants realized that the original company was not sufficiently prepared for future competition and needed to make swift changes to its pricing and market position. The company's management later explored these vulnerabilities in greater depth.

A New Sheriff: A Telecommunications Group Prepares for the Appointment of a New Regulator

A major telecommunications group sought to assess the competitive arena in light of the expected appointment of a new minister of communications. Issues for the participants to consider included the fundamental changes resulting from the outgoing minister's introduction of open-market competition, the entry of new competitors (especially mobile virtual network operators), and the consumer climate following the social protests of the summer of 2011.³⁵

The group wanted to explore a full array of possible scenarios, ranging from maintenance of the status quo to deep structural change in the market. For each of these scenarios, the company would examine predictive trends, detail their manifestation, and examine their implications for the company. The players also would rank the scenarios by likelihood and formulate a strategic action plan that would foster desired scenarios and thwart dangerous ones.

This business game used a combination of scenario-based planning methodologies spread over a series of four sessions.

1. In the first session, participants defined the two central variables that would affect the future of the company over approximately eighteen months. After a thorough review of several options, they selected (a) the level of change advocated by the new minister of communications, placed on the x axis, and (b) consumer preferences for bundled or individual products, placed on the y axis. Their combination created four potential scenarios for the future condition of the communications market.
2. In the second session, participants split into four groups, each of which received one of the four scenarios developed in the first meeting. Each group then developed a detailed description of its scenario. In addition, each group developed an inventory of real-world indicators that would signal its scenario's emergence.

3. In the third session, the groups presented the scenarios and discussed their implications for the company. Together, they identified the most likely scenario, the most dangerous scenario, and the most desirable scenario. Interestingly, all the participants agreed that the most likely scenario was also the most dangerous, which surprised them. Although they had engaged in future planning before the game, they had not analyzed scenarios through the prism of impact and probability.
4. In the fourth session, participants formulated strategies to promote the most desirable scenario and avoid the most likely and dangerous scenario.

Participants ultimately gained a deep understanding of potential scenarios and their inherent implications, risks, threats, and opportunities. This new level of knowledge, along with a discussion of the probabilities of different scenarios, formed the foundation for the development of a strategic plan aimed at preventing (or at least manipulating) the dangerous scenario and promoting the desirable one.

Health for All: A Public Health Fund Prepares for the Rekindling of Social Protests

A year after Israel's social protests in the summer of 2011, many companies in the Israeli market were concerned about the protests' possible renewal and, particularly, the chances of being the next target of consumer rage. Against this backdrop, a public health fund sought to examine its preparedness in the event it became a target.

This game used the classic methodology of role playing.³⁶ The game structure divided the participants into several groups. One group played the health fund; three played its three competitors; a fifth played the minister of health (the regulator); and the last, most diverse group played the consumers.

All participants received an opening scenario that described a rekindling of consumer activism, along with a series of events leading to consumer anger targeting all health funds. The group playing consumers developed creative campaigns against the health funds, while the groups playing the competing health funds identified responses. Finally, the group playing the regulator created barriers limiting the marketing campaigns of the health funds—a common occurrence in reality.

The game revealed deep failures in the health fund's assessments of the scenario. Participants were unaware that a protest directed at their competitors likely would harm them as well. They also lacked awareness of their own weak points with respect to high-volume inquiries, potentially leading to a total collapse of their customer-service system. This game did not include a planning stage; that

is, there was no stage during which participants generated guidelines toward the formulation of a strategic plan. In the aftermath of the game, however, the health fund did prepare a plan, one involving various stakeholders, that provided detailed guidelines in case such a protest ever occurred.

LESSONS FOR THE MILITARY AND BUSINESS WORLDS

As the examples above demonstrate, wargames are an analytical tool designed to overcome the difficulties that characterize strategic planning and decision-making. The following discussion details a few of these unique challenges.

The Strategic Environment

Wargames are an effective tool for creating a laboratory environment in which there is room to experiment with ideas without paying the price of failure. In each of the case studies described above, participants confronted a possible future problem and attempted to find a solution via trial and error. In the third case study, for example, the participants learned to develop potential reactions to events that might result from the behavior of other groups.

Some argue that the laboratory environment is sterile, that reality is always more powerful and complex, and that it is impossible to predict the future fully or reconstruct the past.³⁷ These claims are correct, but they do not negate the usefulness of wargames. Although some wargames have shifted from training for the present to predicting a few possible futures (as happened during the First World War), wargames usually seek to provide general representations to help understand the problem at hand. Wargames apply a concrete perspective to abstract or ambiguous problems, whether actual or potential. The case studies presented above did not seek to provide a full description of reality, but rather focused on simulating key features of the current and future competitive landscapes and informing leadership of potential challenges and opportunities that might emerge from developments in the operating environment.

The objective of a wargame is to generate discussion of selected elements of the environment, given specific, defined parameters. A limited discussion is not less serious than an exhaustive one. On the contrary, discussions that take place in the context of a simulation normally occur without any pretense of predicting the future, instead illustrating a range of potential futures. Business games are, by their nature, somewhat imprecise. Their ambition is to be realistic, but not to reproduce the current reality and prevent or promote a certain future. Wargames make it possible to prepare for and shape the future by educating those who will operate in it. They focus on developing tools and capabilities to prepare for a variety of scenarios, including those not discussed here, and on implementing strategies in the present.

Wargames are not effective if the insights they generate are relevant only to the future. In fact, a significant proportion of future scenarios examine specific implications and make them operational in the present. The first two case studies presented above demonstrated this emphasis. The third exposed current weaknesses, rather than developing contingency plans. As a result, it provoked a process of evaluation within the organization, which led to the development of plans involving similar scenarios.

The principles exercised in these games can reduce the complexity of the strategic environment in both the military and business domains. They give participants a relatively simple—but not simplistic—way to discuss future events, subsequent outcomes, and potential implications for the organization.

Individual and Group Cognitive Limitations

Wargames and business games are a useful tool for overcoming many cognitive distortions, particularly biases in decision-making, beliefs, and behavior. By their nature, role-playing games in business and military realms involve multiple perspectives and provide a framework to challenge existing conceptions by using scenarios. Given their isolated, self-contained environment, they allow participants to focus their thinking on the specified challenges at hand. For this reason, they have the potential to bypass the heuristic jumps that often create cognitive biases.

Role-playing games make no pretense that participants can predict behavior. Rather, they encourage participants to broaden their repertoire of mental schemes and worldviews, allowing them to expand their points of view and take different perspectives. For example, in the first case study, one of the participants played the role of one of his own suppliers and reflected on the real-world actions of his company. From that perspective, he realized that his behavior alienated not only his competitors but also his suppliers and crucial partners in the company's day-to-day activities. In the third case study, participants used their deep understanding of the health fund's weaknesses to explore protest moves that would exploit the fund's vulnerabilities; this revealed which issues required immediate attention before a certain scenario came to pass.

Wargames and business games require a group of experts to come together for a defined period and think together. In essence, this is the "wisdom of the crowd," in the form of the wisdom of many experts together.³⁸ The use of communities of experts as a supporting mechanism in strategic processes helps organizations overcome built-in cognitive difficulties. This, in turn, can help them overcome the significant complexities of strategic environments that are incomprehensible for individuals alone. It integrates subfield expertise with the need to present a

holistic, interdisciplinary picture. The use of targeted crowd wisdom, such as a group of experts playing out a scenario, combines the best of both worlds: that of the individual and that of the crowd.³⁹

Wargames provide a space to employ the expertise and individuality of every participant while leveraging collaboration among participants, to generate maximum value from the intellectual encounter and cross-fertilization of ideas. That said, wargame participants should include experts from a wide range of fields within the organization, including some who are at the core of operations and others who work in the company's general ecosystem.

When creating the lists of participants in all three case studies, the wisdom of the expert crowd was the key principle applied. Each group contained people who performed different business functions, including marketing, sales, finance, and operations. To give participants a multitude of perspectives and stimulate their thinking, their suppliers and contractors also were invited to attend (contingent on signing confidentiality agreements). This injected outside perspectives into the exercise, which otherwise might not have been represented.

Finally, the division into subgroups that must compete with each other or contend with different aspects of the problem (such as in different scenarios) minimized the risk of individual or group bias. In the second case study, participants developed several futures, with the goal of preventing a focus on just one future that the designers presented or that the group dynamic created.

Organizational Structures, Procedures, and Workflows

Wargames, and role-playing games in general, create a unique learning process in which a core group from within the organization creates new knowledge and understanding. The product of the process is not just another book by an external consultant that sits unopened on the shelf. In role-playing games, every participant contributes to the development of the resulting strategic knowledge and therefore is committed to implementing the results. The task of the game manager is to create the conditions for organizational learning and the means for effective implementation of the resulting insights, while also creating deep and multidimensional commitment at the organizational level. Games at this level require the allocation of resources, including time, attention, and money. Beyond that, however, they require serious commitment and cannot be conducted as a side event.

Strategic thinking always requires time and attention and must be removed from everyday concerns. The investment is rewarded, however, when it enables decision-making that is based on careful thought and thorough investigation of the most serious issues. Moreover, bringing key players together in such a laboratory environment leads to deep and relevant insights in a relatively short period. It also promotes flexible, collective thinking that allows the scenario to be adapted to any challenge or strategic environment.

Many organizations experience multidimensional communication problems. Wargames promote shared learning and require group members to set aside their preconceptions and engage in genuinely collaborative analysis. In this kind of learning, there is a free flow of ideas and thoughts among people, organizational functions, and hierarchical levels. These games potentially will improve vertical, horizontal, and external communication, provided that the participating group is heterogeneous and the environment allows for open dialogue, even if it is structured. In the three case studies presented above, each of the groups was heterogeneous in its composition; in the last two games, several of the participants noted that the experience had given them their first significant opportunity to sit down together to think strategically.

Games also involve learning about learning—that is, identifying patterns in the discourse of the participating group that reflect organizational communication patterns. Companies often discover that their patterns of discourse interfere with learning and create a closed organization with a conceptual hierarchy in which struggles for professional integrity freeze the organization and hinder its ability to produce a holistic, strategic picture. In a complex, information-saturated world, the basic unit of learning is the group rather than the individual. The framework of a wargame experience exposes decision makers to a different pattern of learning and allows them to infuse a new perspective into the corporate culture.

In addition, wargames are particularly effective as part of company procedures, rather than as a detached event. The preparation of a wargame for any organization requires a deep understanding of the issues challenging the members of management; the challenges they perceive as central; and the language they use to describe the organization, its goals, and environment. The preparation also should take into account the organization's short- and long-term plans. During the game, the game manager should connect the game processes and the issues that participants raise without a predefined plan for how the game will run. At the conclusion of the game, the game manager should identify the discourse and learning patterns that emerged through the process and compile them for management to use in future company processes. Throughout the game, the game manager should observe the group's insights critically and its results in light of changing circumstances. Just as the laboratory experience is dynamic and changing, so too should organizations and their development of knowledge be dynamic.

Although wargames originated in a military setting rather than a boardroom, thinkers on both sides can learn from methods used on the other, for both ongoing planning and concrete preparation for threats or opportunities.

Surprisingly, the business world's application of wargames is not always in the context of competition among players in the business environment. Business games are based on probable and realistic scenarios; involve a wide variety of actors and variables; and cover complex scenarios involving cooperation, negotiations, and more, similar to pol-mil games.

Perhaps because they are not subject to rigid doctrines and practices, business games tend to be more flexible in terms of methodology, combining several types of methodologies in one game. Such flexibility should be encouraged in military wargames. The military has a tendency to compartmentalize, but in wargames it is worthwhile and often necessary to broaden the crowd of participants instead. Business environments are often similarly hierarchical, although it is easier to remove such barriers in the private sector. Good leaders, however, strive to break down those barriers so that the best ideas emerge, rather than hearing only the loudest voice of the most senior person. A successful wargame allows all participants to express themselves freely, which can be a key component for application in a military environment.

Ultimately, most strategic questions are about mysteries to be solved rather than secrets to be discovered. The distinction is crucial not only for a successful wargame but, more importantly, for successful policy planning and execution. As Richard Duke and Jac L. A. Geurts so accurately summarize, wargames are "a process that will simultaneously master complexity, optimize communication, stimulate creativity, lead to consensus, and develop commitment to action."⁴⁰

NOTES

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PEACETIME NAVAL REARMAMENT, 1933–39

Lessons for Today

Jamie McGrath

[T]o maintain a navy which is not strong enough to win in battle is the worst form of extravagance.

REPRESENTATIVE CARL VINSON, 1934

The election of President Franklin D. Roosevelt in 1932 sparked an unprecedented peacetime naval rearmament that ultimately prepared America to fight and win World War II. The Republican administrations of the 1920s, driven by isolationism and austerity, had made a series of decisions that left the fleet underresourced and therefore incapable of defending the nation from a determined adversary. Roosevelt's efforts, combined with congressional action led by Representative Carl Vinson (D-GA), turned around a decade of neglect of the Navy, funded a balanced fleet, and revitalized the American shipbuilding industry.¹ The service and the industry responded immediately, building modern ships to designs that had been refined throughout the 1920s.

The post-Cold War decline of the U.S. fleet in many ways mirrors the decline that followed World War I. Calls today for a 355-ship "Navy the Nation Needs" appear to be in line with the actions taken in the 1930s to recover naval strength.²

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However, the principal actors differ significantly in their levels of commitment and coordination. Whereas the naval rearmament of the 1930s aimed to achieve desired ship numbers in under a decade, today's rebuilding plan projects a completion date over forty years in the future. The rapid growth of shipbuilding contracts in the mid-1930s forced shipbuilders to expand their collective infrastructure and workforce, while today's modest increase in projected construction rates leaves shipbuilders cautiously optimistic, at best, about investing in growth.

During the 1930s, the executive and legislative branches worked in concert with the Navy and industry to coordinate a rebuilding of the infrastructure needed to build a fleet rapidly in time of war. That level of close coordination is missing today, which threatens to leave America unprepared for future naval conflict.

AFTER WORLD WAR I: DECLINE OF THE FLEET

On Armistice Day 1918, the United States possessed one of the most modern fleets in the world and was building toward a navy equal in strength to the Royal Navy. However, post-World War I efforts to end future conflict, initiated by the United States and supported by the other major world powers, began in 1921–22 with the Washington Naval Conference. The resulting Five-Power Treaty called for a ten-year capital ship building “holiday” and placed restrictions on the size and numbers of future capital ships. To comply with the Five-Power Treaty’s limits, the United States scrapped seven of nine battleships and four of six battle cruisers laid down between 1919 and 1922, and America built no new battleships until 1937.³ The treaty also restricted the construction of various smaller warships.

However, successive Republican administrations, focusing on fiscal austerity and isolationist policies, chose to fund American naval construction at levels well below treaty limits. Throughout the 1920s, the General Board of the U.S. Navy, tasked with advising the Secretary of the Navy on naval policy, remained frustrated with the continued refusal of presidents and Congress to fund shipbuilding, not merely to have sufficient ships, but to field prototypes of new technologies so they could be evaluated in the fleet. While this forced the Navy to explore theories on the application and operationalization of sea power, ideas alone—without modern ships to execute them—were insufficient for national defense. Recognizing the impact of delaying warship construction, the General Board continued to advocate for building to the treaty limits to maintain sufficient capability to defend against the Japanese, who were widely recognized at the time as the most likely adversary of the United States. Unfortunately, the American political climate of isolationism and austerity precluded such shipbuilding, so the board continuously tailored its annual recommendations to make them more palatable to a reluctant Congress.⁴

As a result of this congressional reluctance, the U.S. Navy designed and built only two classes of ships following the completion in 1923 of the World War I construction program. These cruisers and submarines were developed in direct response to the perceived threat from Japan. Starting in 1921, the Navy designed and built a number of submarines intended to create a force capable of operating in Japanese waters, in anticipation of supporting fleet operations in the western Pacific. The cruiser program began in response to Japanese exploitation of a

loophole in the Five-Power Treaty that restricted the size of individual warships but not aggregate tonnage. Japan used this provision to embark on an aggressive cruiser-building program that challenged American naval strength in the Pacific. The United States initiated its cruiser-building program in 1924 with two units and added six more in 1928. In 1927, the General Board requested authorization to build an additional twenty-five cruisers, but Congress cut that request in its enactment of the so-called Cruiser Act (also known as the Butler Cruiser Bill) on February 13, 1929.⁵

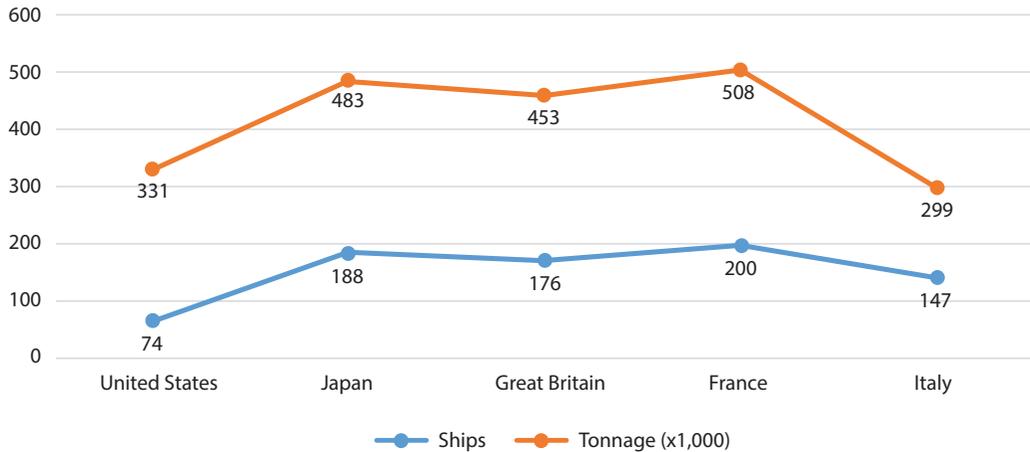
Despite this small and relatively inexpensive initiative to counter the Japanese naval buildup, lack of funding and presidential actions that delayed allocating available construction funds prevented the building of these vessels until after Roosevelt's election in 1932. By the early 1930s, the fiscal constraints of the Great Depression further curtailed construction, leaving the U.S. Navy inferior to the Japanese navy in modern warships, especially cruisers and destroyers.

The General Board and other naval advocates, including Admiral William V. Pratt, Chief of Naval Operations (CNO) from 1930 to 1933, struggled with Congress and the president to maintain a modern American fleet. But their attempts were in vain, and American underage warship numbers in the decade following the signing of the Five-Power Treaty lagged woefully behind those of the other four powers.⁶ In London in 1930, the world's major maritime powers agreed on further limitations to cruiser, destroyer, and submarine tonnages. After the signing of what is known as the London Naval Treaty, U.S. policy continued to keep the Navy below the levels the treaties allowed, in an effort to lead by example on disarmament. By 1932, with Hoover's proposed further reductions in several ship categories, there appeared to be no stopping point for naval disarmament.⁷

American constraint in shipbuilding ceded the initiative to the world's other naval powers. The other signatories to the Five-Power Treaty continued to build warships aggressively in the first decade under the treaty's constraints, as shown in figure 1. Japan, Great Britain, and France each executed construction programs at levels near or slightly exceeding the treaty limits. Italy's program, while slightly less aggressive, also built ships near to treaty limits in numbers, if not in tonnage. In contrast, between January 1922 and March 1933, American warship construction remained well below allowable treaty limits. Because of America's anemic shipbuilding program, the four other Five-Power Treaty signatories each outbuilt the United States, on average, by over one hundred ships and one hundred thousand tons. Japan more than doubled American shipbuilding output, giving it the parity it desired in the Pacific.

By the end of 1933, the American fleet consisted of 187 warships, only eighty-four of which were underage—less than half the number of underage ships in the

FIGURE 1
FIVE-POWER TREATY NATION WARSHIP BUILDING, 1922–33



Source: Derived from U.S. Navy Dept., *Annual Report of the Secretary of the Navy for Fiscal Year 1933* (Washington, DC: U.S. Government Printing Office, 1933), pp. 4–5.

fleet when the United States signed the Five-Power Treaty in 1922. This left the U.S. Navy 157,280 tons below the treaty limits for underage warships, even when including vessels under construction. This amounted to approximately ninety-six vessels below treaty limits, accounting for allowances by type. During the first ten years under the Washington Treaty system, the United States remained caught in a cycle of uncertainty over whether to spend the limited funds available on modernizing battleships, developing carriers, building submarines, supporting naval aviation, or renewing the destroyer fleet.⁸

The dearth of naval construction in the 1920s and early '30s left the American shipbuilding industry incapable of rapidly closing the gap between the shrinking fleet and the treaty limits. Over the course of the 1920s, the number of private shipyards involved in building naval vessels declined steadily. By 1933, only seven private shipyards capable of building warships remained, down from twenty-seven at the end of World War I. Many of the yards that had been building naval vessels turned to other products, such as railroad cars, fishing vessels, or luxury yachts, to maintain financial solvency.

But the reduction in the number of shipyards represented only a portion of the decline in shipbuilding infrastructure. Capacity degraded across the entire range of shipbuilding capabilities throughout the 1920s. Among the significant losses were the physical infrastructures needed to construct ships, such as building ways, and the cranes and outfitting equipment that were sold off to cover lack of profit. Commercial shipbuilding also suffered during this period, further diminishing the shipbuilding industrial base. Shipbuilders were not the only ones that suffered; ancillary industries, such as producers of marine propulsion

systems, armor, and engineering equipment, and even steel manufacturers, also contracted because of the loss of shipbuilding contracts.⁹

The loss of private shipyards and the underemployment of navy yards further led to the loss of workers with critical skills. Design capability eroded as trained naval architects and draftsmen left the business, but the loss of shipyard labor, especially skilled labor, had the most dramatic impact. During the 1920s, both the government's navy yards and private shipyards were unable to attract workers. In 1923, when the Five-Power Treaty went into effect, private shipyards in America employed 68,100 workers. By 1933, less than half that number—33,800 shipyard workers—remained at work in private yards. Because it appeared that jobs were not available in the shipbuilding industry, colleges saw severe declines in enrollment in marine engineering and naval architecture programs. Additionally, fewer people were learning the mechanical trades of shipbuilding, because active apprenticeship programs were no longer available. Workers who possessed those skills, as well as experienced draftsmen and ship designers, drifted away from shipyards, both government and private, to other industries in pursuit of paying employment. This drain in skilled workers represented “one of the most serious handicaps to a revival of shipbuilding.”¹⁰

THE 1930s: REARMAMENT BEGINS

The efforts of American naval leaders in the decade leading up to Roosevelt's election prepared the U.S. Navy to build a balanced fleet once naval construction authorizations and appropriations arrived. Although the General Board's influence waned during Admiral Pratt's tenure as CNO in the early 1930s, the road map outlined in the board's 1922 *U.S. Naval Policy* served as a guide for the naval rebuilding program of the mid-1930s.¹¹

Three mutually dependent concepts—War Plan ORANGE, the “balanced fleet,” and the “treaty navy”—helped secure internal cohesion and external support for naval construction when funding again became available. War Plan ORANGE did not constitute a specific plan, but it represented the manner in which USN planners envisioned fighting a war in the Pacific, using “orange” as the code word for Japan in U.S. planning parlance. The need to transit the vast open-ocean areas of the Pacific to reach the expected battle zone drove fleet and warship design throughout the 1920s and '30s.¹² The balanced fleet concept recognized that, while battleships remained the cornerstone of the Navy's ability to control the seas, a range of smaller vessels played crucial roles in that effort as well. The treaty navy concept that Pratt espoused provided the “magic formula for securing appropriations” despite American distrust of war machines and war manufacturing.¹³ The 1930 London Naval Treaty extended the capital ship building holiday to 1937, but it also extended tonnage limits across other classes of warships, so

Pratt advocated for building ships within the available treaty tonnage that supported the aging battle line. Additionally, by the 1930s, the importance of aircraft carriers and their associated aircraft had been demonstrated, so—with over fifty thousand tons of aircraft carrier tonnage available under the London Naval Treaty—the Navy encouraged expansion of the American carrier force.¹⁴

Pratt's successor as CNO, Admiral William H. Standley, and the chief of the Bureau of Construction and Repair, Rear Admiral Emory S. Land, worked closely with Representative Vinson to shape legislation that satisfied the Navy's construction needs and met congressional expectations for rebuilding American naval capability.¹⁵ This level of close cooperation between the Navy leadership and Congress allowed the Navy to execute shipbuilding plans rapidly when funds became available.

Legislation and Directives

A naval enthusiast since his time as Assistant Secretary of the Navy under President Woodrow Wilson, Franklin Roosevelt possessed an excellent grasp of naval issues. Now, as president, Roosevelt had authority over domestic and foreign affairs, which allowed him the resources to achieve the American naval supremacy in which he believed.¹⁶ In May 1933, as part of his effort to bring the country out of the Depression, Roosevelt submitted massive public works legislation that became the National Industrial Recovery Act (NIRA), which included provisions for funding naval construction. Under this legislation, Roosevelt allocated \$238 million to the Navy—nearly seven times the shipbuilding appropriation for fiscal year (FY) 1934. Since shipbuilding was a very labor-intensive activity, its value as a work-relief program alone justified this spending, but the boost in deliveries of modern naval vessels also improved the fleet. In March 1934, Representative Vinson ensured passage of the Vinson-Trammell Act (also known as the Naval Parity Act and the First Vinson Act), which made it U.S. policy to build ships up to the treaty limits and to replace ships as they aged, as the treaties then in effect allowed. These efforts combined not only to provide the U.S. Navy with a modern fleet to counter Japanese assertiveness in Asia but also to promote the strengthening and growth of the U.S. shipbuilding industry, which had languished in the 1920s owing to the lack of work.

Executive Order (EO) 6174, issued on June 16, 1933, the day after Roosevelt signed the NIRA into law, granted the Federal Emergency Administrator of Public Works “authority to allot the sum of not to exceed \$238,000,000 to the Department of the Navy for the construction of certain vessels, the construction whereof conforms to the London Naval Treaty and has heretofore been approved by me.”¹⁷ Coupled with the FY 1933 appropriation, the Navy now had nearly \$282 million to spend on new construction—a figure twice that allocated for shipbuilding in any year since 1920. Naval historian Samuel Eliot Morison credits Roosevelt's use

of NIRA funds to restart the naval building program as the principal impetus of the U.S. Navy's rebirth.¹⁸

On August 3, 1933, less than two months after Roosevelt's executive order, the Navy awarded contracts for the aircraft carriers USS *Yorktown* (CV 5) and USS *Enterprise* (CV 6), one heavy cruiser, two *Brooklyn*-class light cruisers, twelve *Gridley*-class destroyers, and three submarines to private shipyards, and contracted for two more destroyers on August 20, 1933. Orders for an additional two light cruisers, ten destroyers, and two submarines went to government yards. The funds allocated from the NIRA resulted in the construction of thirty-two warships, in addition to the five ships already contracted under the FY 1933 naval appropriation. One heavy and five light cruisers authorized by the 1929 Cruiser Act remained unfunded.¹⁹

After the initial surge of naval construction funded under the aegis of employment relief, Congress, led by Representative Vinson, acted to provide the president and the Navy with permanent authority to build to treaty limits and replace overage ships. Vinson's powerful influence resulted in passage of the aforementioned Vinson-Trammell Act of 1934, which provided what Vinson referred to as blanket authority for ship construction and replacement to treaty limits. Naval historian Norman Friedman describes the Vinson-Trammell Act as "fundamental legislation" that called for the Navy to maintain an underage treaty fleet.²⁰

Vinson and the Navy wanted a long-range plan for naval construction rather than an emergency program that was executed only when a crisis arose. Such a plan allowed for several improvements, including steady employment of available shipyards, incorporation of changes in ship design on the basis of operations, and prevention of block obsolescence. Vinson stressed that spreading ship construction out over several years allowed for the testing of various types and making improvements. It also allowed for delaying construction of smaller, more quickly built vessels, so that they would be delivered when the larger ships they were designed to support became available. Additionally, Vinson argued that building ships at a steady, predictable rate reduced unit costs, saving the American people money.²¹

The Vinson-Trammell Act authorized expansion of the Navy from its current state, but only to the limits permitted under the Five-Power Treaty of 1922 and the 1930 London Naval Treaty. An excerpt from the act follows:

That[,] subject to the provisions of the treaties signed at Washington February 6, 1922, and at London, April 22, 1930, the President of the United States is hereby authorized to undertake prior to December 31, 1936, or as soon thereafter as he may deem it advisable (in addition to the six cruisers not yet constructed under the Act approved February 13, 1929 (45 Stat. 1165), and in addition to the vessels being constructed pursuant to Executive Order Numbered 6174 of June 16, 1933), the

construction of: (a) One aircraft carrier of approximately fifteen thousand tons standard displacement, to replace the experimental aircraft carrier *Langley*; (b) ninety-nine thousand two hundred tons aggregate of destroyers to replace over-age destroyers; (c) thirty-five thousand five hundred and thirty tons aggregate of submarines to replace over-age submarines.²²

Several critical elements in this section of the act demonstrate the close coordination between Congress and the Navy that proved critical to restoring the fleet. First, the act acknowledged and provided congressional authorization for the ships ordered under President Roosevelt's EO 6174 of the previous summer. Second, the act directed completion of the 1929 cruiser program that had languished under President Hoover. Third, the act directed the replacement of certain overage vessels, amounting to sixty-five destroyers and thirty submarines—two categories in which the American fleet fell woefully short of treaty limits—in an effort to build a more balanced fleet. Fourth, the act recognized the intent and letter of the 1930 London Naval Treaty, calculating the available aircraft carrier tonnage to build USS *Wasp* (CV 7) to replace USS *Langley* (CV 1) to achieve the maximum number of aircraft carriers allowed under the treaty, once the latter ship was converted to a seaplane tender. This also enhanced balance by increasing the aviation capability of the fleet.

While these elements of the act allowed for immediate shipbuilding, the next section had greater implications for naval construction over the long term. “[The] President of the United States is hereby authorized to replace, by vessels of modern design and construction, vessels in the Navy in the categories limited by the treaties signed at Washington, February 6, 1922, and at London, April 22, 1930, when their replacement is permitted by the said treaties.”²³

This clause provided the authority for which the Navy had longed—namely, to plan for and build new warships as the current fleet aged. The date a vessel became overage could be predicted, replacements could be scheduled, and construction requirements could be forecast with some accuracy. Accurate forecasting allowed shipyards to hire and retain workers, knowing that a consistent flow of new construction was forthcoming.

On its passage, Vinson praised the act, stating that it “is no mere piece of paper. It means real fighting ships. We will provide the money this session to start work on part of the vessels authorized.”²⁴ Initial funding arrived when Roosevelt allocated forty million dollars from the Emergency Relief Appropriations Act of 1935 to augment the FY 1935 naval appropriations and start construction on the first twenty ships and 225 aircraft authorized in the Vinson-Trammell Act. By November 1934, the Navy let contracts and work began on these vessels, nine in private yards and eleven in navy yards.²⁵ Although the Vinson-Trammell Act provided only authorization and not appropriation, it reversed twelve years of naval

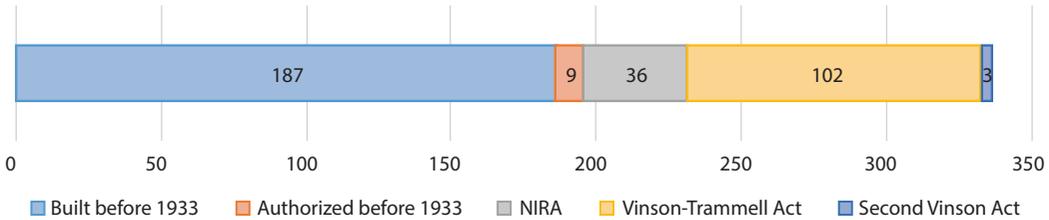
retrenchment and represented the first significant action explicitly to strengthen the Navy between the two world wars.

Nonetheless, to the dismay of naval leaders, President Roosevelt continued to react to political pressure by reducing or deferring many of the Navy's requests for new warship appropriations. Roosevelt remained especially sensitive to the political influence of those in the American peace movement and other isolationists. The 1935 naval appropriation, approved after the Vinson-Trammell Act passed, amounted to just \$11.7 million—half of President Roosevelt's request, and less than the previous year's appropriation before the influx of money from the NIRA.²⁶ However, Congress gradually approved funding, but it did so without fanfare, allowing Roosevelt to placate the isolationists by downplaying naval expansion and emphasizing that national policy aimed only to build a fleet to treaty limits.²⁷

Impact on Shipbuilding Capabilities

It was the authority that the Vinson-Trammell Act granted that allowed the Navy to accomplish its prewar cultivation of shipyards that would be capable of expanding to build a wartime fleet. In wartime, private shipyards provide critical surge capacity to build the fleet rapidly. The Vinson-Trammell Act reversed the preceding decade's shrinkage of private shipyards by allowing the Bureau of Construction and Repair to distribute construction contracts among private and government yards throughout the 1930s. This provided the shipbuilding industry with practice in the construction of new ships and new shipbuilding techniques in advance of World War II.

But the act authorized more shipbuilding than could be accomplished in available shipyards. Existing yards had to expand or more yards needed to be opened to build warships. Either option would mean greater employment. The path chosen was to expand shipbuilding infrastructure within existing private shipyards. No new private companies capable of building warships for the Navy opened yards before 1937, but each of the existing yards ramped up manpower and production capacity to meet the expanding demand. However, even with the building program implemented by the Vinson-Trammell Act and subsequent acts, the shipbuilding industry approached the high levels of production needed for wartime support only in 1941, spurred by massive 1940 building programs. In contrast, by 1938 just ten large private shipyards existed—only a modest increase. That number reached forty by 1941 and eighty by 1945, the latter representing the full expansion necessary to support the war effort and complete over 1,500 naval vessels.²⁸ While the Vinson-Trammell Act provided a reliable program and appropriations slowly followed, it took several years of combat before the volume of production needed for war was achieved. This, however, represented a marked

FIGURE 2
SHIPS IN THE U.S. FLEET, DECEMBER 1941

Sources: U.S. Navy Dept., *Annual Report for Fiscal Year 1934*, pp. 17–19; Cook, *Carl Vinson*, pp. 90–101; *Dictionary of American Naval Fighting Ships*, www.history.navy.mil/.

improvement over the World War I program, under which less than 10 percent of the projected construction was completed in time for war.

At the dawn of U.S. entry into World War II, the American fleet mustered 337 warships, consisting of ships built both before and after the signing of the Five-Power Treaty (see figure 2). The peacetime rearmament efforts of President Roosevelt and Representative Vinson contributed 95 percent of the modern warships available for the war—over 40 percent of the total active fleet on December 7, 1941. Because few of the ships laid down in the emergency programs of the 1940s were completed before the end of 1942, the fleet on hand when the Japanese attacked Pearl Harbor differed little from that which existed in the late 1930s. The ships already under construction soon more than quintupled the size of the fleet—a feat that would have been impossible to accomplish without the deliberate building program of the 1930s that the Vinson-Trammell Act of 1934 authorized.

By strengthening the shipbuilding industrial base, American shipyards prepared for the wartime surge to build the enormous fleet that eventually defeated Japan. From 1940 through 1945, American public and private shipyards produced over 1,500 naval vessels, from battleships and carriers to submarine tenders and minelayers. This number does not include the thousands of smaller vessels, from tugboats to landing craft, nor the massive merchant fleet that carried the American war machine overseas.²⁹

This effort would have been impossible to carry out in 1934, given the depressed state of the American shipbuilding industry at that time. Rebuilding the U.S. Navy in the 1930s provided not only the ships that held the line in 1942 but also the necessary time and experience for American shipyards to recover from a decade of neglect. By doubling the shipbuilding industry's workforce between 1934 and 1938, the rearmament effort restored the nucleus of skilled labor that would prove so crucial over the next seven years of increased naval construction. Shipyards expanded their infrastructure to meet the increased number of ships under construction, including modernizing building ways, machine shops, and supply chains, thereby setting up those yards for the surge of wartime construction.

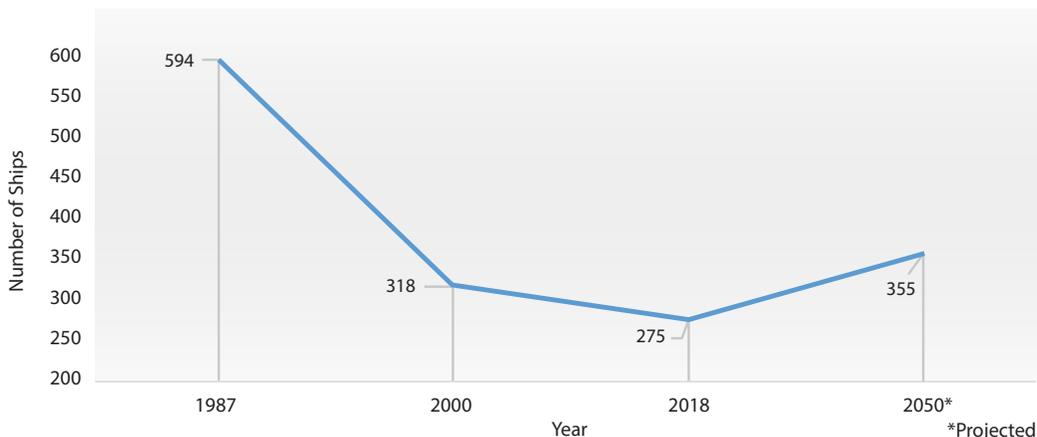
American shipbuilding during World War II was successful because of the combined and concerted efforts of the president, Congress, the Navy, and industry in the decade prior to the war.

AFTER THE COLD WAR: DECLINE OF THE FLEET

The decline of the American fleet in the years following the end of the Cold War (see figure 3) mirrors in many ways the decline of the 1920s. However, significant differences do exist, primarily in their respective forcing functions. In the 1920s, a global desire to end warfare led to international treaties that limited the size of the fleet, whereas no such conventions exist today. Instead, a perceived post-Cold War “peace dividend” initiated today’s decline.

There were other significant differences between the two declines. As mentioned above, one reason the United States limited investment in naval construction in the 1920s was its pursuit of isolationist policies that circumscribed its commitment to world politics. So, although naval leaders complained that the fleet was inadequate to project power across the Pacific, the ships of the 1920s Navy were sufficient to defend the Western Hemisphere and meet the Navy’s peacetime constabulary missions. In contrast, America not only maintained its role as a global leader in the post-Cold War era but also took on the mantle of the world’s single hegemon. Today’s fleet of 275 ships is tasked with maintaining the same level of presence as the six-hundred-ship fleet of the late 1980s, and as a result the fleet is operating at a much higher rate than it was designed to support. As Vice Admiral Thomas S. Rowden, Commander, Naval Surface Forces, noted near the end of his tenure in early 2018, “Simple math tells you that when you

FIGURE 3
POST-COLD WAR USN BATTLE FORCE



Sources: “US Ship Force Levels 1886–Present,” *Naval History and Heritage Command*, November 17, 2017, www.history.navy.mil/; 2050 projected battle force derived from FY 2019 shipbuilding plan.

had 600 ships and were deploying 100, and when you've [now got fewer than] 300 ships and you're deploying 100, there's more stress on the force."³⁰

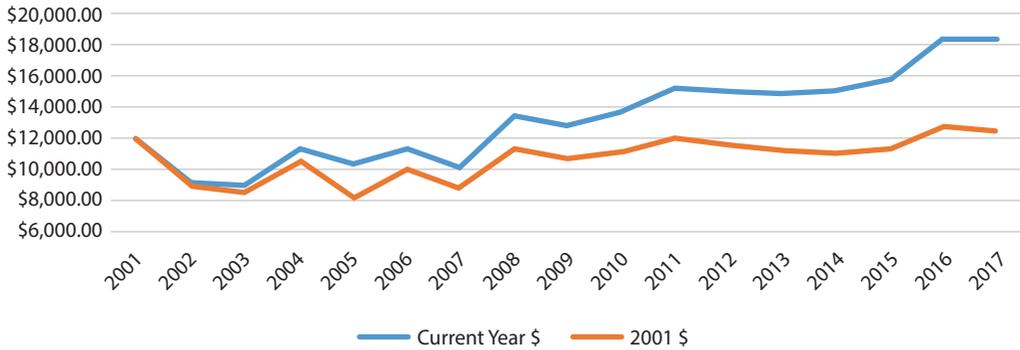
Just as in the 1920s, the post-Cold War decline of the fleet followed an impressive naval buildup, leaving a surplus of naval capacity once the conflict ended. In the final decade of the Cold War, President Ronald W. Reagan's administration dramatically increased military spending in an effort to defeat the Soviet Union. Secretary of the Navy John F. Lehman led the drive for a six-hundred-ship Navy, an effort that peaked at 594 ships in 1987. Lehman's Navy relied on recommissioned World War II-era *Iowa*-class battleships; service-life extension programs for Vietnam-era ships; and large new-construction programs, including *Ticonderoga*-class guided-missile cruisers with the new Aegis weapons system, *Oliver Hazard Perry*-class guided-missile frigates, *Los Angeles*-class attack submarines, *Ohio*-class ballistic-missile submarines, *Avenger*-class mine countermeasures ships, *Whidbey Island*-class dock landing ships, and *Henry J. Kaiser*-class replenishment oilers. Lehman also accelerated construction of *Nimitz*-class aircraft carriers.³¹

As in the 1930s, the American shipbuilding industry benefited greatly from this buildup. Naval ship construction provided 93 percent of all shipbuilding in American shipyards in 1985. This level of shipbuilding activity buoyed an otherwise stagnant manufacturing sector, provided a robust, skilled ship-construction workforce, and furnished an abundance of ships from which to draw when Congress curtailed shipbuilding in the 1990s.

The fall of the Berlin Wall in November 1989 and the subsequent dissolution of the Soviet Union on Christmas Day 1991 meant that America and its allies had won the Cold War. The aftermath brought calls for disarmament similar to those after World War I. While those calls did not result in an international disarmament treaty as in 1922, they did persuade the United States and other NATO nations to make internal decisions to capitalize on a peace dividend, including drastically cutting military spending. Without a looming adversary, the justification for large defense budgets vanished, and the United States abandoned its six-hundred-ship Navy policies and building plans. From the defense budget's peak in 1985, America slashed defense spending over the next sixteen years, cutting it to a low of 3 percent of the total budget by 2000.³²

The terrorist attacks of September 11, 2001, resulted in an immediate and dramatic increase in defense spending, but spending on naval construction remained stagnant through the first several years of the global war on terror. Shipbuilding and conversion appropriations remained below 2001 levels in current-year dollars until 2008 (see figure 4). With the additional war appropriations included, shipbuilding accounts rose slowly through the end of the decade, and at an average rate of 25 percent through the first half of the 2010s. But after

FIGURE 4
U.S. SHIP CONSTRUCTION, NAVY ACCOUNT, 2001–17



Source: Derived from Department of Defense budget estimates for Navy shipbuilding and conversion for FY 2001 through FY 2018, available at www.secnav.navy.mil/.

accounting for inflation, shipbuilding appropriations since 2001 have increased by only 9 percent.

While the 1980s provided a boom of warship and naval auxiliary construction, the 1990s saw curtailment of planned building programs, including truncating the *Seawolf* class of attack submarines to three ships from the twenty-nine planned. The majority of ships decommissioned in the first decade of the peace dividend were Vietnam War–era vessels that had reached or exceeded the end of their expected service lives. Since 2000, the Navy has decommissioned 143 vessels, many—such as the *Spruance*-class destroyers and the *Oliver Hazard Perry*-class guided-missile frigates—before the end of their planned service lives, to save the cost of maintenance and modernization. During the post–World War I and post–World War II drawdowns, the Navy retained large numbers of decommissioned vessels in inactive reserve status. By contrast, during the post–Cold War drawdown, the Navy disposed of many of the ships it decommissioned through foreign military sales or expended them as targets, making them unavailable for reactivation to expand the fleet rapidly. The result is a present-day 275-ship Navy with little capacity for rapid expansion in a time of crisis.

Since the turn of the twenty-first century, the Navy has maintained a steady but slow shipbuilding pace. Unlike during the 1920s, the modern Navy recognized the need to build a balanced fleet that included surface combatants, submarines, amphibious ships, and naval auxiliaries. The post–Cold War building programs addressed this need, but building across this range of ship types resulted in an overall reduction in the funds available to build warships.

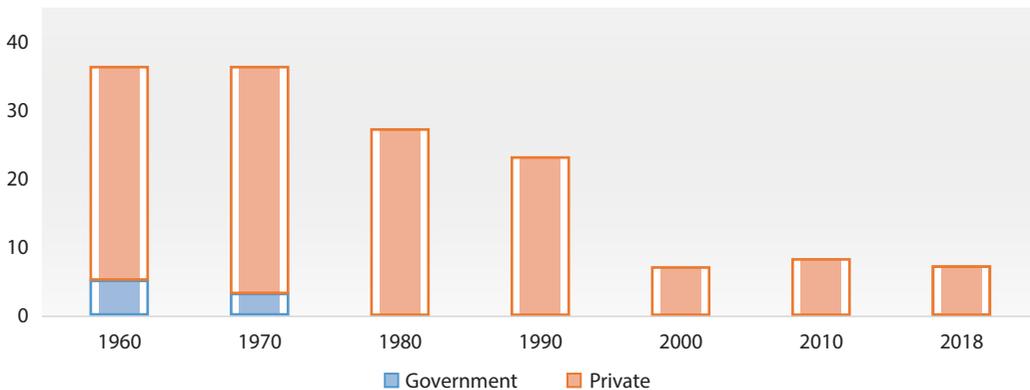
The Navy and Congress also acknowledged, as Representative Vinson argued in the early 1930s, that it was necessary to maintain a minimum level of industrial capacity. Keeping production lines operating became one of the goals of the shipbuilding program during the post–Cold War drawdown. The Navy

commissioned eighty-one vessels between 2000 and 2018, for an average of just under five per year. But that rate merely maintained the status quo for a struggling shipbuilding industry, and the single-ship contracts and uncertain future that resulted from this build rate prevented shipbuilders from investing in future capacity. Naval drawdowns not only increase production costs but also degrade industrial capacity, which severely impacts the Navy’s ability to respond in the event a cold war turns hot.

Again, as in the 1920s, the dearth of new construction caused the American shipbuilding industry to contract, with two significant effects. First, low-rate production caused an increase in per-ship costs as high as 30 percent. Second, lack of naval-construction contracts resulted in the loss of shipbuilding infrastructure and the skilled shipbuilding labor force. As shown in figure 5, seventeen shipyards have stopped building warships for the U.S. Navy since the end of the Cold War. The Navy now depends on seven privately operated shipyards to build the future fleet—just as it did in 1932. However, unlike during the 1930s, America’s government shipyards no longer build new warships; thus the contraction of private shipyards represents an even more severe reduction in capacity.

The concentration of shipbuilding capacity risks significant reduction of critical naval capabilities if combat losses occur, or our adversaries target these few shipyards, or both. Despite the Navy’s attempts to provide sufficient work for each shipyard to maintain a minimum operating capability, the workload for warship construction is concentrated in only a few of these yards. Only one shipyard is currently capable of building the nuclear-powered aircraft carriers deemed critical to the Navy the Nation Needs plan. Destroyer, submarine, and littoral combat ship construction occurs in only two yards for each type. The

FIGURE 5
NUMBER OF U.S. SHIPYARDS BUILDING NAVAL VESSELS, 1960 TO THE PRESENT



Source: Derived from “U.S. Builders of Large Ships,” *Shipbuilding History*, www.shipbuildinghistory.com/.

remaining two yards involved in building ships for the Navy specialize in amphibious ships and fleet auxiliaries.

Huntington Ingalls Newport News Shipbuilding, the only yard building aircraft carriers, is delivering them at an average rate of 5.6 years per carrier. Submarines are building at an average rate of slightly less than one per year. Orders for *Arleigh Burke*-class destroyers were halted in 2005 but restarted in 2010, with the intent of keeping the two shipyards building them in business until the Navy completed plans for the Flight III guided-missile destroyers, which will have increased anti-air warfare and ballistic-missile-defense capabilities.³³ These multiyear procurement contracts maintain a production rate of slightly more than two destroyers per year. But with decommissioning rates of about eight per year, commissioning rates of less than five per year continue the trend of a declining, albeit more modern, fleet.

The cumulative effect of reduced shipyard employment is that it leaves the United States without a viable surge shipbuilding capability. Unlike during the interwar period, government shipyards no longer build ships, instead focusing their efforts on maintaining nuclear-powered vessels, to the exclusion of most other activities. These navy yards, therefore, contribute nothing to current shipbuilding capacity. Additionally, instead of nine navy yards, today only four remain, further limiting surge production capacity in time of crisis. Exacerbating the shrinking of the U.S. shipbuilding industry, over the past three decades the Navy severely cut ship-maintenance budgets to save money. Limiting the use of shipyards conducting maintenance and modernization activities led to the closure of additional shipyards that had specialized in ship repair and severe workforce reductions in those that remained in operation.

Without a significant increase in shipbuilding and without a commitment to funding maintenance and modernization budgets, the American shipbuilding workforce threatens to disappear—again—over the course of the next decade. Many of the same complaints heard in the 1920s and '30s about the drain of skilled workers out of the shipbuilding trades echo today. The current workforce is aging, and shipyards struggle to recruit apprentices willing to commit to learning shipbuilding trades, because potential recruits do not foresee a secure future in doing so. This decline is reversible, but—as before—only with increased shipbuilding contracts.

The one shipyard that has joined the naval construction effort since the end of the Cold War—Austal USA, in Mobile, Alabama—demonstrated that shipyard trades could be developed from a skilled workforce outside traditional shipbuilding regions. When Austal was awarded block-buy contracts for the Littoral Combat Ship and Expeditionary Fast Transport, it nearly doubled its workforce.

But the commitment to build expeditionary fast transports ends with Austal's delivery of the twelfth ship in 2018, and the last littoral combat ship order is planned for 2019. Unless Austal wins the contract for the next-generation frigate, its newly trained workforce will have nothing to do.³⁴

Jennifer R. Boykin, president of Newport News Shipbuilding, writes of the shipbuilding industry's cautious optimism resulting from the call for a 355-ship Navy. A long-range shipbuilding plan that calls for growing the fleet "provides certainty for the shipbuilding industrial base that stabilizes our workforce." She goes on to remind us that shipbuilders are not the only ones depending on growth in naval construction. "Thousands of businesses, large and small, provide the material, equipment, and services necessary to build our nation's fleet. Shipyards across the country depend on these businesses every day to help us meet cost and schedule commitments to the Navy. But that supplier base is smaller today than in the past, declining from almost 15,000 companies at its peak in the early 1990s to about 5,000 companies today, and many of them have fewer than 200 employees."³⁵

Without action to reverse these trends, America risks being unprepared to recover this vital sector of our national defense capability. Worse, it will be unprepared for future conflict.

2018: REARMAMENT BEGINS?

Like President Roosevelt, President Donald J. Trump has called for rebuilding the Navy. His proposal for a 355-ship Navy matches the Navy's 2016 Force Structure Assessment, which determined that 355 ships are necessary to meet the requirements placed on the Navy today, the Navy the Nation Needs.³⁶ Congress, too, has taken action to make a 355-ship Navy the policy of the United States.

But there the similarities end. The Vinson-Trammell Act of 1934 provided a specific and quantifiable shipbuilding program, to be executed within ten years. In contrast, the National Defense Authorization Act (NDAA) for 2018 contains a single sentence stating that "[i]t shall be the policy of the United States to have available, as soon as practicable, not fewer than 355 battle force ships, comprised of the optimal mix of platforms, with funding subject to the availability of appropriations or other funds."³⁷ In 1934, presidential and congressional action resulted in real contracts for ship construction, but efforts today have not resulted in any significant immediate increases in warship procurement.

The current plan is too little, too late, and has little in common with the robust and enthusiastic commitments of the 1930s. In 1933, the Bureau of Construction and Repair awarded contracts for new ship construction within two months of the issuance of EO 6174; today's Navy took six months to provide a shipbuilding plan to Congress—a plan under which increased construction does not begin

until a year in the future. The Navy justifies this delay by the need to conduct critical maintenance and modernization of the current fleet, which does represent a more immediate priority.

However, even when shipbuilding increases begin, the anticipated pace does not represent an urgent effort to restore fleet strength. The Navy's FY 2019 shipbuilding plan achieves the Navy the Nation Needs, including a twelve-aircraft-carrier fleet, in 2060—over forty years in the future. The plan does meet the requirements for the Navy the Nation Needs in all other ship categories by 2050—but that is still over thirty years in the future.³⁸ Between 2019 and 2024, the Navy's shipbuilding plan proposes building only ten additional ships over the previous 308-ship building plan—an increase of merely two ships per year.³⁹ Congress had asked the Navy to budget for an additional fourteen ships over the same period, or an increase of two and a half ships per year. Senator Roger F. Wicker (R-MS), chair of the Seapower Subcommittee of the Senate Armed Services Committee, comparing the Navy's plan with the 2018 NDAA language, put it succinctly: “[T]he Navy shipbuilding plan that doesn't get to 355 ships until the mid-2050s is unacceptable.”⁴⁰

The shipbuilding plan includes provisions for accelerated building, with “additional resources, service life extensions, and strong industry response.”⁴¹ Responding to Senator Wicker's concerns, Under Secretary of the Navy Thomas B. Modly claimed that 355 ships could be achieved in the 2030s, and placed responsibility for accelerated shipbuilding on Congress to provide additional funding. According to the Congressional Budget Office, that additional funding would amount to over three billion dollars—a sum potentially unacceptable to Congress and the American public. Vice Admiral Thomas J. Moore, the commander of Naval Sea Systems Command, provided specific plans for service-life extensions and delayed decommissionings of *Avenger*-class mine countermeasures ships, *Cyclone*-class patrol craft, and *Ticonderoga*-class guided-missile cruisers, and a pilot program for extending the life of *Los Angeles*-class attack submarines.⁴² These actions would abate the imbalance between decommissioning and commissioning, but, as Representative Robert J. Wittman (R-VA), chairman of the Seapower and Projection Forces Subcommittee of the House Armed Services Committee, notes, “[T]hat is still of limited utility, you still have to build new ships.”⁴³ Echoing Wicker's concerns, Wittman also criticizes the Navy's FY 2019 shipbuilding budget submission for being so low, noting, “The floor is \$26.2 billion and 13 ships. Anything else is unacceptable.”⁴⁴ Demonstrating Congress's frustration with the Navy's less aggressive shipbuilding program, the Consolidated Appropriations Act of 2018 provides \$23.8 billion for ship construction, including building a total of fourteen ships—five more ships than the Navy requested. Congress's action adds an additional littoral combat ship and accelerates the acquisition of a fourth

expeditionary sea base and the lead ship of the next-generation amphibious warship, the LX(R).⁴⁵ There clearly is a disconnect between the Navy and Congress over accelerating fleet expansion and the mechanism by which to achieve it.

Current CNO Admiral John M. Richardson claims that sufficient current industrial capacity exists to increase production rates.⁴⁶ Shipyards, however, remain reluctant to hire and train additional workers or expand their physical infrastructure without assurances of future orders.⁴⁷ The additional ten ships planned, spread out over five years and across seven shipyards, averages to an additional 0.3 ships per year for each yard—well below the rates the CNO states are possible, and not exactly a level of expansion that encourages investment. But Boykin of Newport News Shipbuilding again offers some cautious optimism that things are moving in the right direction, stating that “our industry has long awaited a signal from the government to prepare, invest, and grow. I believe this budget agreement, combined with the Navy’s 30-year shipbuilding plan to grow our fleet, are telling our shipbuilding industrial base that it is time for our Navy to grow into the larger, stronger, and more powerful force that our nation needs.”⁴⁸

One similarity with the 1930s buildup is the expansion of block purchases of ships. Funding construction of multiple ships at a time using multiyear procurement contracts results in a 10 percent reduction in unit costs by allowing shipyards to achieve an economy of scale not available with single-ship contracts. The FY 2019 shipbuilding plan and the recently passed Bipartisan Budget Act of 2018 both allow for multiyear procurement contracts for destroyer, submarine, amphibious dock landing ship, and fleet oiler construction.⁴⁹

In the 1920s and ’30s, America possessed the greatest industrial potential of any nation in the world. Although Japan’s naval construction exceeded America’s before 1941, both sides recognized America’s ability to outbuild the Japanese once America reached its full industrial potential. Today, America’s ability to outbuild its adversaries is not guaranteed. China presents the most significant threat to American supremacy at sea today, as the seventy-eight-ship naval parade staged for President Xi Jinping in April 2018 demonstrated. Chinese shipyards are building modern warships at a rate equal to U.S. yards, but the Chinese shipbuilding industry is not operating at full capacity for naval construction. With over a dozen shipyards building large merchant vessels, China has the industrial base to expand warship construction rapidly; America has no such commercial shipbuilding base to expand.⁵⁰ This disparity puts the United States in the precarious position that Japan occupied during World War II: unable to match its opponent in building a modern fleet or to make up for losses once conflict begins.

Much can be learned from the peacetime naval rearmament of the 1930s. It takes a concerted effort from the executive, Congress, the Navy, and industry to

achieve the balanced fleet required to fight and win wars at sea. Today, each of these players asserts the desire to rebuild the Navy in this age of renewed maritime competition, but coordination among them is missing. The Navy needs a more aggressive shipbuilding plan. Congress needs to follow up on its policy statement and appropriate the funds required to accelerate ship construction. More importantly, the Navy and Congress must work together toward a common understanding of fleet requirements. The shipbuilding industry's response to calls for a larger fleet naturally lags government action. Therefore, the government must collaborate with private shipbuilders to meet the strategic imperative of expanding the American shipbuilding industrial base.

Rebuilding the fleet in the 1930s prepared the nation for an unknown war that came in 1941. In the same way, the United States must embark on a fleet-rebuilding effort now to ensure the nation is ready for the next conflict when it arises.

NOTES

1. 78 Cong. Rec. 1598 (1934) (statement of Rep. Vinson).
2. Office of the Chief of Naval Operations, *Report to Congress on the Annual Long-Range Plan for Construction of Naval Vessels for Fiscal Year 2019* (Washington, DC: February 2018), p. 3. The Navy uses the term the "Navy the Nation Needs" to describe the validated 355-ship requirement that supports the 2017 National Defense Strategy.
3. Figures on pre-1950 shipbuilding, shipyards, and employment throughout are derived from H. Gerrish Smith and L. C. Brown, "Shipyard Statistics," in *The Shipbuilding Business in the United States of America*, ed. F. G. Fassett Jr. (New York: Society of Naval Architects and Marine Engineers, 1948), vol. 1; Michael Lindberg and Daniel Todd, *Anglo-American Shipbuilding in World War II: A Geographic Perspective* (Westport, CT: Praeger, 2004); Clinton H. Whitehurst Jr., *The U.S. Shipbuilding Industry: Past, Present, and Future* (Annapolis, MD: Naval Institute Press, 1986); and U.S. Navy Dept., *Annual Report of the Secretary of the Navy for Fiscal Year 1934* [and subsequent years] (Washington, DC: U.S. Government Printing Office, 1934).
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5. Lindberg and Todd, *Anglo-American Shipbuilding*, pp. 88–91.
6. Part 3, Section I, of the Five-Power Treaty allowed the replacement of capital ships and aircraft carriers considered "over-age"—twenty years after their completion. Limitation of Naval Armament [Five-Power Treaty or Washington Treaty], February 6, 1922, 43 Stat. 1655, T.S. No. 671. Article 9 of the 1930 London Naval Treaty expanded the overage replacement criteria to all warship classes, and Annex I defined overage limits for the various ship classes. *Underage* ships are all those newer than those that have reached overage replacement age.
7. Julius A. Furer, *Administration of the Navy Department in World War II* (Washington, DC: U.S. Navy, Naval History Division, 1959), p. 213; Waldo H. Heinrichs Jr., "The Role of the United States Navy," in *Pearl Harbor as History: Japanese-American Relations 1931–1941*, ed. Dorothy Borg and Shumpei Okamoto (New York: Columbia Univ. Press, 1973), pp. 198–99.

8. Heinrichs, "The Role of the United States Navy," pp. 198–99.
9. Lindberg and Todd, *Anglo-American Shipbuilding*, pp. 68, 87; Furer, *Administration of the Navy Department*, pp. 214–15.
10. Furer, *Administration of the Navy Department*, p. 215.
11. Kuehn, *Agents of Innovation*, pp. 170–71. The 1922 U.S. *Naval Policy* document has been lost to history. The text of the policy was included in the 1925 report of the proceedings of the General Board. Kuehn reproduces it as appendix 2 of his book. Some debate exists on how to title this document; I have chosen to follow Kuehn's convention.
12. Edward S. Miller, *War Plan Orange: The U.S. Strategy to Defeat Japan, 1897–1945* (Annapolis, MD: Naval Institute Press, 1991), pp. 1–8.
13. Heinrichs, "The Role of the United States Navy," p. 206.
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15. George Baer, *One Hundred Years of Sea Power: The U.S. Navy, 1890–1990* (Stanford, CA: Stanford Univ. Press, 1994), pp. 119–22.
16. Philip T. Rosen, "The Treaty Navy, 1919–1937," in *In Peace and War: Interpretations of American Naval History, 1775–1984*, ed. Kenneth J. Hagan, 2nd ed. (Westport, CT: Greenwood, 1984), p. 232.
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18. Samuel Eliot Morison, *The Two-Ocean War: A Short History of the United States Navy in the Second World War* (Boston: Little, Brown, 1963), p. 20.
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22. Vinson-Trammell Act of 1934, Pub. L. No. 73-135, 48 Stat. 503 (1934).
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24. Carl Vinson, as quoted in Cook, *Carl Vinson*, p. 102.
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27. Stephen W. Roskill, *Naval Policy between the Wars*, vol. 2, *The Period of Reluctant Rearmament, 1930–1939* (Annapolis, MD: Naval Institute Press, 1976), pp. 177–78.
28. Whitehurst, *U.S. Shipbuilding Industry*, p. 143.
29. Smith and Brown, "Shipyard Statistics," p. 120.
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31. "Ship Building 1981–89—Reagan, Ronald," GlobalSecurity.org.
32. "Chart of Defense Spending from 1945 to 1999," *Primary Sources*, www.learner.org/.
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36. Executive summary to 2016 Navy Force Structure Assessment (FSA), December 14, 2016, available at news.usni.org/.
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38. Office of the Chief of Naval Operations, *Report to Congress*, p. 6.
39. The Navy's 2014 FSA called for a 308-ship battle force. *The Department of Defense Fiscal Year (FY) 2018 Budget Estimates: Shipbuilding and Conversion*, Navy requested ship construction to support the 308-ship goal. The FY 2019 shipbuilding plan, in response to the 2018 NDAA direction to build a 355-ship battle force, is the first to request additional ships to reach the 355-ship goal. For more information on the 2014 FSA, see Ronald O'Rourke, *Navy Force Structure: A Bigger Fleet? Background and Issues for Congress*, CRS Report (Washington, DC: Congressional Research Service, November 9, 2016).
40. Senator Roger Wicker (remarks at the McAleese / Credit Suisse Defense Programs Conference, Washington, DC, March 6, 2018), quoted in Ben Werner, "Lawmakers Not Satisfied with Navy 355-Ship Plan," *USNI News*, March 6, 2018, news.usni.org/.
41. Office of the Chief of Naval Operations, *Report to Congress*, p. 3.
42. Sam LaGrone, "Navy Leaders See Possible Path to 355 Ships by the 2030s," *USNI News*, March 6, 2018, news.usni.org/.
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47. Megan Eckstein, "Shipbuilders Still Awaiting Details of 355-Ship Fleet Buildup Plans 1 Year Later; Yards Won't Make Investments without Firmer Signals from the Navy," *USNI News*, December 14, 2017, news.usni.org/; Megan Eckstein, "Shipbuilders Worried about Navy Plan for 1 LCS in 2019 Ahead of Frigate Transition," *USNI News*, March 2, 2018, news.usni.org/.
48. Boykin, "Larger Navy Benefits Country, Shipbuilders."
49. O'Rourke, *Navy DDG-51 and DDG-1000 Destroyer Programs*, p. 9.
50. Shannon Tiezzi, "Chinese Naval Shipbuilding: Measuring the Waves; An Interview with Andrew S. Erickson," *The Diplomat*, April 25, 2017, thediplomat.com/.

REVIEW ESSAYS

THE PLURALITY OF AMERICAN WAR

John T. Kuehn

Ways of War: American Military History from the Colonial Era to the Twenty-First Century, by Matthew S. Muehlbauer and David J. Ulbrich. 2nd ed. New York: Routledge, 2017. 516 pages. \$74.95.

Matthew S. Muehlbauer and David J. Ulbrich have produced an admirable text built around Russell Weigley's framework in his now classic *American Way of War*.¹ The occasion for this review is the release of an updated, second edition of this work. As mentioned, the book clearly seems designed as a text, specifically for

an upper-level undergraduate course, but possibly for graduate-level seminars on American military history as well. Accordingly, this review assesses the book on the basis of that pedagogical design.

The authors' study is primarily narrative in nature, but never far from the flow of facts, figures, faces, and the occasional military fiasco hangs the authors' overarching thematic argument: there is no one American way of war, but rather many ways, determined by a complex interaction of factors and institutions. They have updated this aspect of the book in an expanded introduction to the second edition, but its fundamental claim remains unchanged (pp. 5–6). The student or professor wanting one-stop shopping for these ways of war will be rewarded here.

Dr. John T. Kuehn is a professor of military history at the U.S. Army Command and General Staff College (CGSC). 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. He has taught a variety of subjects at CGSC since 2000. He authored Agents of Innovation (Naval Institute Press, 2008), A Military History of Japan: From the Age of the Samurai to the 21st Century (Praeger, 2014), and Napoleonic Warfare: The Operational Art of the Great Campaigns (Praeger, 2015), and coauthored Eyewitness Pacific Theater (Sterling, 2008) with D. M. Giangreco. He was awarded a Moncado Prize from the Society for Military History in 2011. His latest book from the Naval Institute Press is America's First General Staff: A Short History of the Rise and Fall of the General Board of the Navy, 1900–1950 (2017).

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The sheer scope of the text is impressive, yet it does not descend overmuch into the weeds of battles and military trivia, instead remaining focused on how conflict involving Americans, and not just European Americans, has evolved over the years. Nonetheless, the narrative does start—as advertised in the title—with the mass arrival of “modern” Europeans on the North American continent during the sixteenth century. However, that is preceded by cogent contextual discussions of native warfare prior to the arrival of the Europeans; the so-called military revolution in early modern Europe; and necessary discussions of tactics, technology, and logistics. In other words, the authors do a fine job of setting up the in-place “initial conditions” for the continuum of conflict that follows. This is good news for novices to these debates, since it gives them, up front, an understanding of the key definitions and concepts used throughout the text. Another welcome discussion is that covering the “levels of war.” All too often Americans, and readers and writers of military history specifically, are two-dimensional in their thinking about war as just tactics and strategy (pp. 4–5). The operational level of warfare and the higher level of policy beyond military strategy often are disregarded in instruction and writing on these matters beyond what one might find in esoteric discussions of military doctrine.

As for the narrative itself, in something of such broad scope the biases and preferences of the authors are almost inescapable. But they tend to succeed in achieving their aim of using the most updated scholarship to avoid perpetuating the tired myths and unchallenged legends that make up so much of what sometimes is called popular American military history. However, no one author, or two, can be expected to get it all completely correct, or agreeable, as if such a thing is even possible. The purpose of this review is not to catalog all those places where the authors’ narrative differs from the reviewer’s interpretation of things, especially causation. A larger understanding of history includes such arguments about the past, but the purpose of this study is more of an ongoing refinement rather than a final word.

However, one minor error that occurs in the last chapter is worth correction. The authors claim that the Goldwater-Nichols Defense Reorganization Act of 1986 delineated as follows: “The chairman [of the Joint Chiefs of Staff, CJCS] . . . assumed a new position in the operational chain of command: Theater commanders reported to the chairman, who then reported to the president” (p. 468). Goldwater-Nichols does make the CJCS the “principal military adviser to the President, the National Security Council, and the Secretary of Defense,” but under §211 it states: “CHAIN OF COMMAND.—Unless otherwise directed by the President, the chain of command to a unified [i.e., regional or theater] or specified combatant command runs—(1) from the President to the *Secretary of*

Defense; and (2) from the Secretary of Defense to the commander of the combatant command” (emphasis added).² In other words, the CJCS is simply the principal military adviser, and civilian control over regional or global combatant commanders is absolute and does not include the chairman.

That quibble aside, many of the accounts listed here are refreshing in the new way in which they cast American conflict, in terms of both its political context, owing to foreign and domestic factors, and what has been called the “war and society” approach.

Finally, the later chapters in particular might be regarded as the starting point for future conversations about events still ongoing and will serve instructors and teachers well in engaging their students in debates about more-recent and familiar events. The second edition takes the book up to the most recent times of President Barack Obama’s second term and, particularly, includes a heavy critical component of the (still ongoing) so-called Global War on Terror as well as a discussion of the impact of the neoconservative movement on the American way of war (pp. 478–79, 490–95). These are welcome additions and fit nicely into the overall construct of the book.

Historian N. A. M. Rodger recently wrote about Americans and history as follows: “Our problem is not that we know too little history to understand the present but that we know too much, and most of it is wrong.”³ Muehlbauer and Ulbrich’s effort here goes a long way toward correcting that problem—if only more people would read it. Highly recommended for all audiences, not only college undergraduate and graduate students.

NOTES

1. See Russell F. Weigley, *The American Way of War: A History of United States Military Strategy and Policy* (Bloomington: Indiana Univ. Press, 1973).
2. Goldwater-Nichols Department of Defense Reorganization Act of 1986, Pub. L. No. 99-433, §§201, 211, 100 Stat. 992, 1005, 1013 (1986).
3. N. A. M. Rodger, “The Hattendorf Prize Lecture: The Perils of History,” *Naval War College Review* 66, no. 1 (Winter 2013), p. 8.

COUNTING THE COST OF LEARNING

Dale C. Rielage

Learning War: The Evolution of Fighting Doctrine in the U.S. Navy, 1898–1945, by Trent Hone. Annapolis, MD: Naval Institute Press, 2018. 432 pages. \$34.95.

There are two widely popular narratives of the U.S. Navy in the Pacific during World War II. On the surface, they are contradictory.

The first narrative thread is that in the interwar years the U.S. Navy created an extraordinary laboratory for innovation and learning. Its perceived success finds validation in Fleet Admiral Chester W. Nimitz's assertion that rigorous and repeated Naval War College wargames had ensured that "nothing that happened during the war was a surprise . . . except the kamikaze tactics."¹

But there is also a second, less triumphant story. The U.S. Navy's victories at Coral Sea and Midway were darkened by repeated defeats in the waters off Guadalcanal. Most recently chronicled in James Hornfischer's *Neptune's Inferno*, the loss of ships and sailors in the face of competently handled Japanese naval forces reveals an organization that failed in the crucible of combat.

Both narratives, of course, describe the same navy. While conflicting historic narratives are commonplace, the gap between these two views is more than an academic exercise for serving naval officers. As the U.S. Navy contemplates how to meet the challenge of great-power competition, the perceived lessons of the interwar years have become a touchstone. Following the lead of the wider Department of Defense, the Naval War College is seeking to reinvigorate wargaming. The U.S. Pacific Fleet has resurrected the name, and to some extent the model, of the interwar Fleet Problem exercises as a practical laboratory for advanced war fighting. If the intellectual ancestors of these structures produced hidebound conventional wisdom rather than high-velocity learning, much of the service is potentially on the wrong track and needs to look at other examples.

In his extraordinary new book, *Learning War*, Trent Hone seeks to reconcile these two views, producing a nuanced understanding of the U.S. Navy as an organization. In doing so, Hone manages to view the familiar through new eyes,

a feat he accomplishes by making two distinctive choices in his analysis.

First, Hone focuses his attention on the surface navy, reversing the view of many standard works that emphasize the emerging naval aviation arm.

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Hone rejects as simplistic and incomplete the conventional view that the loss of the battle line in the attack on Pearl Harbor forced conservative admirals to embrace, if only out of necessity, the potential of carrier aviation. Before World War II, naval aviation was a small, although controversial and important, part of larger questions of naval strategy and tactics. As a result, the U.S. Navy's thinking on naval aviation formed only a part of how it adapted to the stresses of combat during the first years of World War II. Senior officers' understanding of naval combat, including the employment of naval aviation, was formed through the lens of a fleet focused on its surface line.

Second, Hone approaches the U.S. Navy as a "complex adaptive system." Applying his professional background as a management consultant, he approaches the interwar Navy as if it was a business client working to adapt to a dynamic competitive environment. Through this approach, he touches on the commonly cited mechanisms—the General Board, the Fleet Problem exercises, and Naval War College wargames—but transcends them to address more-fundamental issues of institutional culture. While previous authors have described the relationship among these institutions as a "virtuous cycle," Hone expands beyond that simple description. Large institutions are inherently complex systems, which evolve through the interactive behavior of their individual elements and their wider environment. He eschews the neat cause-and-effect narrative of most histories, describing instead a network of officers with differing understandings of the profession, the environment, and their roles. This network interacted, adapted, and learned in a nonlinear way. Even if this formal systems approach is new to the reader, every naval leader who has guided or shaped meaningful change will recognize its elements instinctively.

Adaptability—which is to say, effective evolution—is not a given in complex institutions. Within the considerable latitude of USN doctrine, Hone discovers a strong diversity of tactics, techniques, and procedures within and among individual commands and warfare communities. To modern eyes, this diversity represents a troubling lack of standardization. In Hone's view, it was a strength, ensuring that the U.S. Navy entered the war with "clouds" of possible options that became seeds for rapid evolution. As Nimitz suggested, while not everything that came to pass in the war was expected, very little was unanticipated. Effective evolution requires a place where it is "safe to fail." The Fleet Problem exercises and wargames provided that opportunity. Hone, however, approaches these events as opportunities to test and share dynamic thinking rather than create it, focusing on the innovative culture of the officer corps.

This war-fighting diversity was bounded by a body of doctrine that created a common understanding among senior and midgrade commanders of how to view and react to tactical and operational situations. Hone takes the doctrine

discussion a step further, describing the “tactical heuristics” that guided the U.S. Navy (p. 123). Heuristics can be thought of as rules of thumb or habits of thought that rapidly suggest an “adequate, though often imperfect, answer to difficult questions.”² For Hone, the cumulative effect of the interwar Navy’s culture, learning, and doctrine caused the officer corps to internalize three tactical heuristics: a bias toward aggressive action, an emphasis on quick and effective gunfire, and a culture of decentralized command and control.

In the early days of the war, when confronting expected challenges such as the Imperial Japanese Navy’s long-range torpedoes and night-fighting tactics, these heuristics guided the reactions of the fleet. While they inherently suggested imperfect solutions, in the dynamic environment of combat they were more right than wrong. For example, while gunfire was more or less effective given the tactical situation, generations spent training officers to open fire quickly at maximum ranges focused the fleet on attacking effectively first—a habit that translated into the employment of naval aviation.

Thus, Hone arrives at one of the most difficult issues for serving officers seeking to understand the U.S. Navy’s performance in the early days of World War II: how to understand the two views of the U.S. Navy’s performance in the Pacific. What Hone suggests is that there is no dichotomy in the two accounts. Rather, the early defeats represented a dynamic and adaptable institution of learning in the harshest of environments. The diversity of thought and views allowed for a range of approaches to combat, with the best ones emerging as models for the fleet. The success of the U.S. Navy was not that it correctly anticipated every part of the World War II combat environment. Rather, it was successful because it was in the position to learn from the reverses that would have rendered a less adaptable navy a permanent loss.

Hone also suggests that, unfortunately, the factors that created this adaptability could not scale to meet the needs of modern industrial warfare. In 1938, there were just over 6,500 USN officers, growing to almost 39,000 by December 1941. By the end of the war, there would be more than 325,000 commissioned officers. In the massive wartime expansion, new officers and sailors could not be allowed the time and space to learn in the old familiar ways. Out of necessity, the Navy moved from exploration (learning new approaches) to exploitation (using patterns that had proved successful). This approach was remarkably successful in the critical task of transmitting knowledge and culture to inexperienced personnel. While there remained pockets of innovation—Hone reexamines the introduction of the combat information center as one such example—the interwar approach could not survive through the conflict.

As the U.S. Navy considers a return to great-power competition, the parallels to the interwar years are attractive. As in the 1930s, navies are working to

understand and exploit new technologies: cyber warfare, unmanned systems, artificial intelligence, and long-range sensor networks. Multiple peer competitors are making their own plans and assessments about the future. With the purchase of every new ship or system, the Navy makes a multidecade bet on how the old assumptions will change. Unfortunately, Hone does not paint a reassuring picture of the post–World War II Navy. Despite the peace, the Cold War required the U.S. Navy to remain a large institution, requiring standardized and repeatable approaches. Exercises and games that had been sandboxes for experimentation became mechanisms to refine and reinforce established solutions.

Nonetheless, the postwar Navy did learn and adapt to nuclear weapons, nuclear power, electronics, space, and long-range strike. If Hone is correct that the interwar model was unsuitable for the modern U.S. Navy, then the question of how the U.S. Navy learned and evolved after World War II presents a worthy subject for a separate book.

Until that volume comes along, *Learning War* represents one of the most profound contributions to the discussion of high-velocity learning in a naval setting in print. Few historians have captured the past in a way that raises so many ideas and challenges for the present. As a result, no serious consideration of the U.S. Navy in World War II will be complete without reference to this volume.

Quite simply, if you are a serving officer and propose to read even one work of naval history this year, this book should be the one.

NOTES

1. Chester W. Nimitz [FAdm., USN], speech to Naval War College, October 10, 1960, folder 26, box 31, RG15 Guest Lectures, 1894–1992, Naval Historical Collection, Naval War College, Newport, RI, quoted in John M. Lillard, “Playing War: Wargaming and U.S. Navy Preparations for WWII” (PhD dissertation, George Mason Univ., 2013), p. 1.
2. Daniel Kahneman, *Thinking, Fast and Slow* (New York: Farrar, Straus, Giroux, 2013), p. 98, quoted in Hone, *Learning War*, p. 12.

BOOK REVIEWS

HIGHS AND LOWS

The Royal Navy in the Age of Austerity, 1919–22: Naval and Foreign Policy under Lloyd George, by G. H. Bennett. London: Bloomsbury, 2016. 296 pages. \$120 (paperback \$39.95, e-book \$28.76).

Royal Navy captain Stephen Roskill's 1968 study *Naval Policy between the Wars* (Naval Institute Press) has dominated the historiographical scene on this subject for half a century. G. H. Bennett's volume now successfully adds much depth and new understanding to the naval policies of Prime Minister David Lloyd George's government in the immediate aftermath of the First World War. Bennett's volume follows, but with a much different focus, Erik Goldstein and John Maurer's *The Washington Conference 1921–22* (Routledge, 1994) and Donald Lisio's *British Naval Supremacy and Anglo-American Antagonisms, 1914–1930* (Cambridge Univ. Press, 2014). Rather than following the traditional approach to this period of concentrating on international diplomacy and external issues, Bennett demonstrates "a multifaceted approach rooted in political and naval history but opening up new and cutting-edge debates in other areas of historical study to transform traditional debates" (p. xiv). Laudably, Bennett seeks an approach to naval history that breaks down the artificial barriers that place the study of

navies in a watertight compartment and isolate it from "total history" and the broader patterns of relevant linkages in political, military, economic, business, social, gender, and labor history.

The works of Volker Berghahn, Jon Sumida, and Samuel P. Huntington have had an impact on Bennett's focus. Significantly, Bennett's approach reflects the parallels he sees in the 1919–22 period with the issues surrounding British naval policies in the second decade of the twenty-first century.

In opening his sensitive and innovative study of this three-year period, Bennett points out that Lloyd George's government had a particularly tricky range of problems to balance after World War I. While other recent historians have interpreted the period as one of discontinuity in British naval and defense policies, Bennett sees continuity. The inability of the government to "get it right" in the area of naval policy was a direct result of the size and complexity of the issues that it faced. The difficulty lay in the interconnectedness of naval policy with government politics, the private sector,

and communities. As Samuel Huntington would have put it, British naval policy had been in a state of “disequilibrium” even before the beginning of the First World War, and this continued into the postwar period. Britain’s economy was declining in comparison with other national economies; changing technology and weapons were rendering obsolete Britain’s investment in its battleship fleet; and other countries, notably Japan and the United States, had the potential to build navies that would end British naval mastery. British leaders correctly saw these developments as significant threats to the security, stability, and future of the British Empire.

In the immediate postwar era, Britain faced massive war debts, along with a range of severe social and political issues complicated by unemployment, labor unrest, and the rise of socialism. These issues combined to create challenges to the existing social, economic, and political order. In trying to create naval policies in this complex environment, the Lloyd George government made its national security decisions on the basis of what it might be able to afford rather than on preparing for the worst-case scenario. That worst-case situation, of course, was the war that would occur twenty years later, but that neither the government nor the British voter could contemplate so soon after the horrific events of World War I. Ministers were forced to balance naval preparedness for a future war against national bankruptcy and the fears of a socialist victory by election or revolution. In this situation, Lloyd George placed his ministry’s priority solely on the financial consideration and the reduction of public spending rather than on a considered analysis of the strategic situation and

the likelihood of war. The ministry’s institution in 1919 of the “ten-year rule” in defense planning effectively excluded the possibility of thinking about war.

As Bennett points out, this was in one sense a logical and pragmatic approach, but it forced the Royal Navy and the other armed services to find alternative explanations for keeping the service in a state of preparedness to deal with the future security of Britain and the empire. While the service turned to effective arguments such as showing that battleship construction helped reduce unemployment, Bennett argues that this undermined a clear understanding of the purpose and value of the navy, harming it in the long run. He goes on to argue that the ten-year rule had a pernicious and long-term effect by establishing the precedent that leaders could make competent defense decisions without an assessment of strategic needs and threats. Bennett underscores the lesson from this period that political imperatives cannot compromise strategic threat assessments and decisions. “Dangers must be identified and noted, even if the means to meet them are not immediately at hand” (pp. 179–80).

Bennett’s book is a significant contribution to naval history. Not only does it provide a new interpretation of historical events, but it does so by placing the navy in a much broader context. While other scholars may argue points of interpretation, his vision in bringing about a broader understanding of the naval dimensions of this period is a model for others to follow and apply. Equally important, his volume has much to say to current practitioners and strategic planners.

JOHN B. HATTENDORF



The End of Grand Strategy: US Maritime Operations in the Twenty-First Century, by Simon Reich and Peter Dombrowski. Ithaca, NY: Cornell Univ. Press, 2017. 252 pages. \$30.

As Hal Brands wrote in his 2014 work *What Good Is Strategy?* (Cornell Univ. Press), grand strategy is “very much in vogue these days” (p. vii). In the broadest sense, it is a quest to find some semblance of order in the intricately complex security environment. The more disorderly the global security system, the more expansive the change under way in this system; and the more fragile the domestic consensus on national priorities, the greater the need for some sort of unifying and guiding strategy. That is why Americans desperately are seeking one now.

Even though the body of scholarly literature on grand strategy is large and growing, in *The End of Grand Strategy* Simon Reich and Peter Dombrowski have made an original, provocative, and contrarian contribution, arguing that Americans are inclined toward a “one-size-fits-all” grand strategy based on global primacy that has “little utility in the twenty-first century” (p. 2). Primacy, Reich and Dombrowski believe, “has become the default option of American academics and policy makers who deliberate over grand strategy” (p. 41). This option leads to two major problems: primacy is no longer feasible for the United States, and the actual application of American power, particularly military power, does not reflect the grand strategy on which Reich and Dombrowski feel that it is based.

The authors advocate abandoning the “one-size-fits-all primacist” grand

strategy and using a flexible array of six strategies: primacist-hegemony, leadership / cooperative security / unilateral hegemony, formal sponsorship, informal sponsorship, isolationist retrenchment, and restrained retrenchment. Reich and Dombrowski then provide six maritime case studies to illustrate that the United States already is using this array of strategies even while claiming to use a unitary one-size-fits-all one.

This argument makes sense if—and only if—the authors’ conceptualization of grand strategy is accurate. But has anyone outside the academy ever claimed that there is a discernible, unitary American grand strategy that dictates the application of national power? The authors write: “By definition, the architectural design of any single, abstract strategy is relatively rigid if not indeed static—intellectually, conceptually, analytically, and organizationally” (pp. 167–68). But outside the academy, there is no “single, abstract” U.S. grand strategy. There never has been and never will be.

A case can be made that what Reich and Dombrowski are describing is the natural and enduring distinction between theoretical grand strategies, which often strive for logical consistency and internal coherence, and applied strategy. Just as no military operation ever perfectly reflects the operational plan behind it, there never is perfect congruity between a theoretical grand strategy and the practice of strategy. That is the reason that the grand strategic guidelines that the U.S. government uses to guide its action—particularly the congressionally mandated *National Security Strategy* documents—do not constitute coherent, logically consistent grand strategies for a theorist or scholar.

In practice, American political leaders use the national grand strategy, be it primacy or something else, as a shorthand way of explaining the complex security environment to the public and its elected representatives, and as a very broad and pliable set of historically derived best practices and aspirations. No policy maker ever made a decision and no military leader ever crafted a theater strategy or operational plan because it was what the grand strategy demanded. As John Gaddis phrased it in *On Grand Strategy* (Penguin Random House, 2018), grand strategy is simply “the alignment of potentially unlimited aspirations with necessarily limited capabilities” (p. 21). It is a constantly shifting web of patterns and habits blending both aspirations and predilections, a creed, even a myth, and not something prescriptive, such as a legal code. Outright dissonance between its theory and its practice would be worrisome, but some level of incongruity is normal, even inevitable.

While theorists of grand strategy talk of primacy, in reality the United States is focused more on maintaining the system it created rather than trying to dominate it. Thus the configuration of the U.S. military, which is derived from a practice of reasonably being prepared for low-probability/high-risk threats such as major war, while devoting most of its effort to system-maintenance missions, makes sense. Ultimately, Reich and Dombrowski’s contention that the United States is at the end of grand strategy does not stand up if grand strategy is conceptualized as a set of if/then statements or rules of thumb, as a shorthand way of communicating and building consensus rather than official writ.

That said, *The End of Grand Strategy* is a challenging, erudite, and worthwhile read. It is unusual in its use of sea

power to illustrate its points. It is right about the enduring centrality of American naval power. It is right that a “new” grand strategy is not the solution to America’s security problems. However, to borrow from Mark Twain, the authors’ report of the death of grand strategy may be an exaggeration.

STEVEN METZ



Hell on Earth, by Avigdor Hameiri, trans. Peter C. Appelbaum. Detroit, MI: Wayne State Univ. Press, 2017. 478 pages. \$39.99.

War memoirs and war literature frequently intersect. Because of the traumas and tragedies of war and the impact they have on individuals, it is not uncommon for authors to write of their experiences of war using fiction to give voice to both literary creativity and personal experience. Karl Marlantes’s powerful novel *Matterhorn* (Grove, 2010) is one example, written about his experience of the Vietnam War as a Marine officer. So also are the writings of Israeli author Avigdor Hameiri (1890–1970) a reflection of the author’s experience of an earlier war.

Born in the village of Odavidhaza, in Carpathian Ruthenia in Austria-Hungary (near present-day Mukacheve, western Ukraine), Hameiri fought in World War I as a soldier in the Austro-Hungarian army and recounted his experiences in two fictionalized memoirs, *The Great Madness* (1929; translation published by Vantage, 1952) and *Hell on Earth* (original-language publication, 1932). The former recounts experiences of a Jewish soldier on the eastern front, while the latter, the translation of which is the subject of this

review, recounts a soldier's (Hameiri's) experiences as a Russian prisoner of war. Interestingly, Hameiri does not write of bearing a grudge or resentment toward his captors. He writes candidly of cruelty and deprivation, but the cruelty is more often on the part of other prisoners with different nationalities or ethnicities than of his Russian captors.

Published in Hebrew in 1932, *Hell on Earth* was not translated into English until military historian and translator Peter C. Appelbaum did so in the present volume. Much of Appelbaum's research and writings focus on the experience of Jewish soldiers during the First World War, and, that being the case, he chose an excellent project and provided an exceptional result. *Hell on Earth* presents a vivid and memorable account of the experiences of soldiers taken captive on the eastern front during the war. When readers think of the literature of World War I, it is often the British war poets or novels from other nationalities such as Erich Maria Remarque's *All Quiet on the Western Front* (1929) or Ernest Hemingway's *A Farewell to Arms* (1927), and, perhaps, memoirs such as Vera Brittain's *Testament of Youth* (1933) and Ernst Jünger's *Storm of Steel* (1920). Writings from the war in the east are often overlooked, as are writings about prisoners of war. Yet World War I created eight million prisoners of war. In fifty-four chapters (and each could be read separately with benefit), Hameiri brings the reader into a world of uncertainty and survival. His narrative presents conversations, thoughts, and reflections on the mundane and the profound. Set far from the western front, Gallipoli and the Dardanelles campaign, the siege of Al Kut, or the battle of Jutland, Hameiri's work is a reminder of the war in a locale often overlooked.

From the first words—"A rainy, filthy, muddy morning" (p. 27)—readers are drawn into the world of the soldier who would soon become a prisoner of war. The author is descriptive, detailed, haunting, and humane. Remarkably, the author ends the work on a note of humanity and forgiveness. In so doing, he provides readers with hope in the midst of a broken world and a reminder that ultimately, every prisoner (and person) must confront the limits of what others can do to them and wrestle with what is within the prisoner's power and what is beyond the prisoner's power. Such a reckoning is exactly what Vietnam prisoner of war and Congressional Medal of Honor recipient Vice Admiral James B. Stockdale, USN, wrote of frequently with respect to his captivity (as have many others, such as Aleksandr Solzhenitsyn and Viktor Frankl).

A translator's preface and a map set the stage for the work and give prescient insight into the challenge of translating such a linguistically rich book. A remarkable introduction, written by Avner Holtzman, a professor of Hebrew literature at Tel Aviv University, provides extensive contextualization of the work in Jewish literature of the era and war literature of World War I. *Hell on Earth* is filled with drawings of captivity made by Hameiri, including one of his escape from the camp in Irkutsk. Each drawing adds a dimension to the work that is powerful and thought provoking.

The volume contains helpful endnotes illuminating geography, history, and historical characters, as well as biblical and Talmudic citations the author used. Appelbaum's translation flows smoothly, such that the writing readily engages the reader, drawing the reader quickly into a world of the warrior often forgotten in war literature. What strikes the reader

frequently throughout the book is the almost prophetic foreshadowing of the experience of millions of people of the Holocaust—pointless cruelty, medical experiments, starvation, disease, louse infestation. Although this deprivation was not true of all Russian prison camps during the war, it was of Hameiri's.

The book is important as war literature and as prisoner-of-war literature and deserves a wide reading. The writing is graphic and the horrors of war are presented in a manner that few will forget. *Hell on Earth* is a vivid reminder that the tragedy of war never should be forgotten or minimized. It is a book to read and on which to reflect. Those who do so will not be disappointed.

TIMOTHY J. DEMY



Brutality in an Age of Human Rights: Activism and Counterinsurgency at the End of the British Empire, by Brian Drohan. Ithaca, NY: Cornell Univ. Press, 2018. 256 pages. \$45.

During its late-twentieth-century wars of decolonization, Great Britain employed counterinsurgency methods, such as indefinite detention and coercive interrogations, that human rights activists challenged. Initially in Afghanistan and Iraq, the United States employed the same counterinsurgency policies and tactics the British had used decades earlier, and, not surprisingly, the United States faced the same legal challenges in the first decade of this century that the British faced from the 1950s through the 1970s. The U.S. legal battles have been well documented over the past decade, and now *Brutality in an Age of Human Rights* exposes the controversial colonial policies and tactics sanctioned by British civilian and military authorities from 1955 to 1975.

When the insurgencies in Iraq and Afghanistan began, U.S. leaders studying past counterinsurgencies had relatively few scholarly works to consult. Then, as the focus on international human rights law grew, so too did the number of books that exposed contentious wartime policies and methods. Brian Drohan's book is a valuable resource for lawyers, planners, and policy writers studying the history of human rights and its effect on counterinsurgency warfare.

Brutality in an Age of Human Rights unequivocally dispels the myth that the British were anything but brutal in their counterinsurgency methods while maintaining a public façade of rule of law adherence during the Cyprus emergency (1955–59), the Aden emergency in Yemen (1963–67), and the Northern Ireland Troubles (during the 1970s). Drohan, a U.S. Army officer, West Point history professor, and historian of modern Britain, expanded his University of North Carolina–Chapel Hill dissertation into this scholarly work that includes 847 endnotes and a detailed bibliography documenting the author's extensive research.

Drohan uncovers what others largely have ignored: the role of human rights activists in shaping wartime policies and practices. Backed by colonial-era records, Drohan persuasively argues that lawyers, local and international societies, and political groups actively challenged British civilian and military leaders—shaping the strategic debates on human rights that affected operational- and tactical-level counterinsurgency methods. Relying on documented incidents, Drohan exposes Britain's harsh tactics and counters the British narrative that mythologized its image of colonial rule through minimal force.

For each conflict considered, Drohan describes its origin, introduces the activist groups, exposes the human rights violations, details the activists' challenges to the British methods, and reveals the British leaders' systematic and bold efforts to deny any brutality against insurgents and innocent civilians. Throughout the book, Drohan provides numerous examples of *lawfare*, a concept he describes as a strategy for using—or misusing—the law to achieve an operational military objective.

Chapters 1 and 2 cover the late 1950s Cyprus insurgency and the Cyprus Bar Council's extensive efforts to counter Britain's coercive interrogation methods to obtain intelligence. With parallels to the war on terror, Greek Cypriot lawyers challenged the colonial secretary's Emergency Regulations that vested near-absolute power in the British military commander on Cyprus. The legal battles continued for years, including an appeal to the European Commission of Human Rights to investigate the British atrocities; however, Britain successfully deflected the allegations until the conflict was resolved without any meaningful resolution of the abuses that British soldiers perpetrated.

In the 1960s, when an anticolonial insurgency arose in the British territory of Aden and Britain employed the same brutal tactics used in Cyprus, the International Committee of the Red Cross (ICRC) stepped in to protect unlawfully detained nationalists. Chapters 3 and 4 detail the ICRC and Amnesty International efforts to counter and expose British violations on the international stage. With aggressive, unrelenting campaigns on both sides, it was, as Drohan notes, a protracted and messy affair, with numerous investigations,

British manipulation of the process, and hollow victories for the advocates.

Chapter 5 focuses on British brutality during the Northern Ireland Troubles, including Britain's approval of five techniques used for interrogation of interned prisoners: wall standing, hooding, white noise, sleep deprivation, and a bread-and-water diet. Despite evidence of illegal detention and coercive interrogations, Britain successfully limited government inquiries and shielded or absolved officials and interrogators from legal liability. Years later, when George W. Bush administration officials sanctioned similar enhanced interrogation techniques, those officials likewise were shielded from liability.

Drohan's examination and detailed study of the relationship between human rights activism and British counterinsurgency practices is worthy of review by civilian and military leaders with a role in shaping wartime policy, particularly lawyers, military planners, and policy writers. *Brutality in an Age of Human Rights* is eminently worthy of a spot on the counterinsurgency bookshelf next to David Galula's *Counterinsurgency Warfare* (Praeger, 2006), John Nagl's *Learning to Eat Soup with a Knife* (Univ. of Chicago Press, 2005), and the *U.S. Army / U.S. Marine Corps Counterinsurgency Field Manual* (Cosimo, 2010).

JEFF A. BOVARNICK



Realist Ethics: Just War Traditions as Power Politics, by Valerie Morkevičius. Cambridge, U.K.: Cambridge Univ. Press, 2018. 268 pages. \$34.99.

Professor Valerie Morkevičius offers a provocative thesis in her new book: the just war tradition has more in

common historically with realist views of international relations than with the idealist views that characterize contemporary just war thought. She argues that just war thinking will be a more effective constraint on the use of force if it returns to those realist roots, rather than continuing trends toward pacifism and “liberal crusading” that dominate much modern work on just war. Morkevičius supports her thesis with careful scholarship in the Christian, Islamic, and Hindu just war traditions and persuasive arguments about the relationships among religion, power, law, and the use of force.

Morkevičius was motivated by puzzling behavior prior to the 2003 U.S. invasion of Iraq. Prominent realists, such as John Mearsheimer, Stephen Walt, and Robert Pape, vocally opposed the war as unnecessary and inimical to U.S. interests. Prominent just war thinkers, including Michael Walzer, James Turner Johnson, and Jean Elshtain, expressed cautious support for the war. Curious about how realism—often associated with the amoral use of force by states—could be invoked to oppose the war, while the just war tradition—normally associated with limits on the use of force—could be called on to support it, Morkevičius studied the history of just war thought. “I expected—in typical liberal fashion—to see a constant evolution of just war norms toward the good. . . . What I found was a history of power” (p. 5).

The book rigorously traces that history. Drawing on representative thinkers from major periods of Christian, Islamic, and Hindu just war thought, Morkevičius shows that just war thinking can be evaluated through an international relations lens as expressing evolving norms about the use of state power. Norms are a more efficient way for powerful states

to enforce their desires than frequently going to war. Just war traditions represent one way to create and sustain norms that benefit powerful states. To be clear, she does not suggest that religious authorities cynically serve the interests of the state; rather, they are pragmatic about the scope of their influence.

Morkevičius shows how the relationship between religious authority and the state can explain the historical focus of just war thought. When the political power of religious authorities was tenuous, religious thinkers emphasized the legitimacy of the state and focused on questions of how believers could justify war—*jus ad bellum* questions. When the relationship between religious authority and the state was more secure, the religious leaders offered views on how political authorities should conduct themselves in war—questions of *jus in bello*. Thus, early Christian and Islamic writers were concerned with whether, when, and against whom war could be justified, while later writers in both traditions explored the duty to protect noncombatants from the evils of war. Hindu just war thought is more difficult to trace, since it relies more on oral traditions and less on written scriptures, but Morkevičius shows a similar development in Hindu epics and sacred texts. Concern with the treatment of noncombatants, she asserts, reflected not only a religiously founded moral emphasis on mercy but also a politically expedient emphasis on avoiding actions that would make it difficult to govern conquered territories by fostering bitterness among the defeated population. The three disparate religious traditions Morkevičius examines are united by a pessimistic view of human nature. They all believe that, although humans need

each other to survive and thrive, people are naturally fractious, routinely fighting with one another rather than cooperating. Political realism shares this outlook. By contrast, much contemporary just war thinking begins from a secular legalist perspective, which is more optimistic and idealistic about human nature and the ability of rules and norms to create a just society. Morkevicius argues that this modern idealism is responsible for both a pacifist tendency in modern just war thinking, which can weaken its power to create norms, since states are unlikely to give up the use of force entirely, and an interventionist tendency, which leads to concepts that challenge sovereignty, such as the responsibility-to-protect doctrine. While the motives are laudable, she asserts, these trends risk marginalizing the influence of just war thought.

Practitioners will find the argument of this book interesting and will benefit from exposure to Islamic and Hindu just war traditions, which are likely less familiar to them than the Christian tradition. Scholars will enjoy the rigorous research and careful textual analysis. Whether one agrees with its thesis or not, the book challenges readers and engages them in an important dialogue about how power, religion, authority, and norms interact in the international arena.

DOYLE HODGES



Cadets on Campus: History of Military Schools of the United States, by John Alfred Coulter II. College Station: Texas A&M Univ. Press, 2017. 464 pages. \$50.

J. A. Coulter has done a masterful job tracing the evolution and history of

military schools throughout the United States over the past 216 years. What really makes this book unique is the extent of Coulter's research. He provides a comprehensive review of all the military schools that have been established across the United States. The appendices, notes, and references are a testament to the research Coulter conducted to prepare the manuscript. He provides both history and analysis to demonstrate the impact of each of these schools on American history. As a graduate of the U.S. Military Academy, I was fascinated to learn about the important role that the graduates of military schools have played in our nation's history.

Initially, Coulter lays the foundation and explains the elements of military school culture in terms of Edgar Schein's organizational culture model using artifacts, espoused values, and underlying assumptions. Artifacts include the cadet uniforms, rank, and insignia. Espoused values consist of the cadet honor codes and leadership values. "According to Edgar Schein, the final and most powerful element of organizational culture is shared tacit assumptions which result in perceptions, feelings, and behaviors that are learned and taken for granted and are not debatable" (p. 4). These elements make the military schools unique and give them a special place in the history of American education.

Coulter tells the story of how just a few men, such as Major Sylvanus Thayer, USA, and Captain Alden Partridge, USA, who worked together in the early years at West Point, were instrumental in the growth of military schools and colleges across the United States. Partridge's subsequent court-martial and removal from West Point laid the

groundwork for him to establish a military school in Norwich, Vermont, which later became Norwich University. “Partridge would eventually be associated with the citizen soldier concept and years later be known as the father of ROTC [Reserve Officers’ Training Corps]” (p. 38). Thayer implemented systems still in use today, including a rigorous academic curriculum and the West Point honor code. “As superintendent at West Point, Sylvanus Thayer would lead that institution from 1817 to 1833. In that role he firmly established an ethos and standard of education that led to the expansion of the military school concept well into the current century” (p. 35). Thayer and Partridge planted the seeds of military education that would grow and prosper across the country. The students taught by Thayer and Partridge would go on to establish military schools and colleges throughout the United States on the basis of the model they developed.

Coulter does a superb job explaining how the growth and expansion of military schools and colleges is tied to events in U.S. military history. He notes that “[b]y far the greatest impact on military schools of the United States has been war” (p. 249). Except for a slight decline immediately after the Civil War, the number of military schools increased steadily from 1802 through 1926. Thus, it reached its peak after World War I; the numbers declined steadily after World War II and the Korean War. But it was the Vietnam War and the ongoing atmosphere of social change that sounded the death knell for several military schools and colleges. Coulter writes, “The political impact of the Vietnam War, along with a cultural shift among young people, was responsible for a 65

percent reduction in the nation’s military schools” (p. 250). Military service was clearly not the same badge of honor that it had been after previous wars.

Recently, however, there has been a resurgence in the number of military schools. “Starting in 1999 and continuing until at least 2014, the decline in the number of military schools and their enrollment ended, and these indicators have reversed” (p. 239). There are a number of reasons for this. Charter schools increasingly are adopting the military school model as a means of improving students’ character. Women also have integrated seamlessly into many of the programs. For example, the first captain at West Point last year was a female who eventually was accepted as a Rhodes Scholar. Finally, the public image of the military profession has improved radically, according to recent Gallup polls (p. 240). Each of these factors contributes to the resurgence of military schools in the United States.

Coulter’s research and storytelling indicate a level of scholarship that few achieve. My only criticism is that it would have been useful to have more background on the history of military schools in other cultures for comparison. Are the military schools in the United States unique, compared with the models established in other cultures? If so, what makes them unique?

Coulter has done an exceptional job tracing the history and factors that influenced military schools across the United States. I would recommend this book wholeheartedly to anyone interested in learning about the military school model.

THOMAS J. GIBBONS



Soft War: The Ethics of Unarmed Conflict, ed. Michael L. Gross and Tamar Meisels. Cambridge, U.K.: Cambridge Univ. Press, 2017. 294 pages. \$27.99.

Over the last twenty years and arguably long before that, the line between “war” and “not war” has become more blurred than it ever has been. In part, this is because of a greatly increased number of actors using force to achieve a variety of goals, but also because new technologies and applications present grave challenges to attempts to determine what are “acts of war.” Cyber attacks, economic sanctions, so-called media warfare, and lawfare now exist in the increasingly large and complex gray zone separating peace and war.

There has been little examination of applicable rules and guidelines to encourage and ensure right behavior in this growing gray zone. *Soft War* examines the potential benefit in applying the law of armed conflict (LOAC) and the just war tradition to these arenas of soft conflict. The result is a collection of fourteen eclectic chapters examining eight separate areas related to soft war. Not surprisingly, some chapters make their case much more strongly than others, but together they make for provocative and interesting reading.

Although the quality of individual chapters is uneven, the editors are sincere in their efforts to examine the role of ethics and rules in an area where currently all but none exist. The lineup of authors is impressive and includes such notables as Cécile Fabre of All Souls College, Oxford University; Joy Gordon of Loyola University; and George R. Lucas, the recently appointed Vice

Admiral James B. Stockdale Professor of Ethics at the U.S. Naval War College.

Those who adhere to a traditional view of security, peace, and war will find many of their assumptions and beliefs challenged by *Soft War*. Concepts such as *jus ad vim* (the use of force short of war) raise questions about the sort of operations that would belong in this category and what, if any, ethical framework could be applied to these operations. One of the strengths of *Soft War* is the identification of operations conducted by both state and nonstate actors that do not meet the threshold of war but definitely are not peace.

The book’s introduction and first chapter suggest a new definition of war that is thought provoking and useful. Given that formally declared war apparently is passé, efforts to define just what the term *war* encompasses are overdue. For example, does the use of force against an opponent remain one of the prerequisites for moving from peace to war? Or can the effects of nonlethal actions produce outcomes so severe as to be considered an act of war?

The book’s strongest chapters are those dealing with subjects that are better known to the larger security profession. Authors of these chapters tend to produce the best arguments and convincing conclusions. For example, chapter 7, “State-Sponsored Hacktivism and the Rise of ‘Soft’ War” by George Lucas, is excellent. The other chapters in this section on cyber warfare, media warfare, and lawfare are also among the best in the book.

That said, editorial sincerity and several excellent chapters likely will not convince traditional security professionals to support applying the LOAC as a

guide to dealing with these emerging threats. Whether *soft war* is actually *war* still remains up for debate, despite *Soft War*'s well-crafted arguments.

Having examined cyber war, media war, and lawfare, *Soft War* takes on the general category of *nonviolence*, and the more-specific questions of hostage taking and prisoners. One of the more-provocative chapters examines the use of unarmed bodyguards. This title applies primarily to unarmed civilians performing the role of peacekeepers without UN authorization. Some readers will be surprised to learn that some small-scale operations of this nature have been undertaken, but no reader should be surprised at the complications deriving from attempts to conduct such operations on a much broader scale. Even more surprising is the argument that under some circumstances, civilians might be conscripted, morally and legally, to conduct such an operation.

Soft War's concluding chapter, "Proportionate Self-defense in Unarmed Conflict" by Michael Gross, is not a summation of the book's content but a separate piece of scholarship that stands on its own merit. Gross discusses appropriate responses to sanctions, lawfare, and cyber warfare/terrorism, and he also identifies and examines some of the very significant challenges in constructing a valid response to unarmed attacks. His conclusion that "soft war poses an abiding challenge for just war theory" (p. 232) is somewhat anticlimactic; for all that, it is defensible.

In the end, *Soft War* is much more an invitation to a conversation than it is a set of ready-to-use solutions. It does raise questions to which, so far, there are no answers. It proposes solutions, some

of which are likely to create additional and potentially worse problems. Its contributors do not hesitate to challenge status quo thinking and deliver new perspectives. Perhaps most importantly, this book recognizes that ethical considerations must be part of operations in the gray area between peace and war and that the time to identify tools and guidelines for resolving those associated ethical issues is now.

RICHARD J. NORTON



Patton's Way: A Radical Theory of War, by James Kelly Morningstar. Annapolis, MD: Naval Institute Press, 2017. 352 pages. \$35.

When most people think of General George S. Patton Jr., USA—even people who should know better—they tend to confuse him with George C. Scott, the actor who played him in the 1970 movie *Patton*. In many ways, that is a tribute to Scott's acting and the power of film in contemporary society, but there is a reason the motion picture was made in the first place: Patton was an exceptionally good general who got results.

James Kelly Morningstar reminds us of that fact in this powerful and significant account of Patton's approach to war fighting. Much of Patton's unique approach to combat operations has been obscured by a number of factors. He died soon after the war, which allowed other Allied generals to offer accounts in the form of interviews, speeches, and memoirs that emphasized their contributions and, in turn, downplayed those of Patton. In addition, many people, including historians and army officers studying his battles, did not understand or appreciate fully his approach, and

attributed Patton's results simply to "daring . . . intuition . . . determination."

Morningstar chooses to differ. He quotes Brigadier General Oscar W. Koch, USA, Patton's chief intelligence officer, on this matter: "If one can call anticipation of enemy reactions based on a lifetime of professional training and on thinking and application 'intuition,' he had it" (p. 7). Morningstar argues that "Patton was one of the Army's few deep thinkers and an astute theoretician" (p. 16). He contends that Patton's theories were the subject of careful study of military history and geography and an understanding about the logic of power—in particular, the combination of time, space, and mass.

Patton rejected the U.S. Army doctrine of the day that emphasized firepower and attrition. In a sense, he was the rebel against the system that the George C. Scott movie presents. "Patton developed a new calculus of war: fire to enable maneuver, maneuver to create shock, shock to frustrate enemy decision-making, frustrate decision-making to destroy enemy morale, and destroy morale to collapse the enemy's will" (pp. 3–4). To do these things, Patton encouraged subordinate initiative, speed, and flexibility at the tactical levels. He relied on intelligence, not only to know where the enemy was but to get a sense of how a battle would unfold, which gave him an understanding of how to beat his adversary. As in the game of chess, he wanted to cut off his opponents' options and beat them before they had a chance to take action. Many contemporaries looked at what Patton was doing and failed to understand. Subordinate initiative looked like poor command and control. Maneuver and the application of firepower against lightly held

positions often made others think his units were never battle tested, which ignored the fact that he was not trying to get into an attritional engagement.

This book is one that every serious specialist of World War II should read. More importantly, it is an account that any individual involved in developing doctrine in any professional army—be it the U.S., British, or South Korean—should read, study, and consider carefully.

NICHOLAS EVAN SARANTAKES



Enlisting Faith: How the Military Chaplaincy Shaped Religion and State in Modern America, by Ronit Y. Stahl. Cambridge, MA: Harvard Univ. Press, 2017. 384 pages. \$39.95.

Ronit Y. Stahl, a professor of history at the University of California, Berkeley, has written a detailed and fascinating book on the American military chaplaincy. Of the piles of books on military topics that authors, historians, analysts, and academics publish each year, books on emergent military technology, historical battles, and biography dominate the stacks; religion and the chaplain corps responsible for tending to servicemembers' ecumenical needs tend to get short shrift. And when religious matters—and in particular chaplains—are written about, these works often focus on larger matters of ethics or morality in military service. Thus, it is welcome to see Stahl's scholarly work on a military specialty that is one of the smallest across all military services but whose effect on servicemembers and their culture is often directly inverse to its size.

Stahl begins the story in the early twentieth century, when the modern American

military chaplaincy constituted one of the World War I-era progressive reforms of the military services. It probably is not a surprise that in 1917 the American military chaplaincy involved three major religious groups: Catholicism, Judaism, and Protestantism. Stahl notes that what the U.S. government and U.S. military needed was ministers, priests, and rabbis to perform three vital functions for the servicemembers fighting in Europe: bury the dead, perform religious services, and provide training to military members.

At the crux of Stahl's story is a military with a chaplain corps that from its creation always has lived a precarious balance: the need to minister spiritually to the men and women in uniform while refraining from making the state a proponent of any one church or moral teaching. In fact, Stahl summarizes this quite nicely, saying, "When Americans live, fight, and die together, religion does not reside on the margins or evaporate from communal compounds. Instead, the military chaplaincy tries to navigate a careful course that enables religious practice without trampling on the rights of others or establishing a state religion" (p. 264).

Also, from the genesis of the chaplaincy to its current form, in each decade and during every war, there has been friction. Stahl walks the reader through these challenges, beginning in World War I with the building of a young chaplaincy in the services and simply efforts to recruit enough chaplains to administer ecumenical rites to thousands of servicemembers serving in Europe. From World War I and into the interwar years and through World War II, other issues arose. How should chaplains serve a segregated military? Which religions should the military officially

recognize, and how quickly should they do so? (Interesting fact: Stahl notes that we began with three religious groups and now the Department of Defense [DoD] recognizes 221 "faith group codes.") In World War II, questions of sex caused plenty of headaches among chaplains. With religious groups such as Catholicism advocating abstinence until marriage and prohibiting the use of prophylactics, how were Catholic chaplains to remain faithful to their church's teachings while realizing that DoD distributed condoms to servicemembers to minimize sexually transmitted diseases, with the goal of preserving an effective fighting force? These issues and others—female chaplains, homosexuality, grooming standards, food observances—have been contentious points for many religious groups.

Religious clashes were inevitable—and will continue to be. As Stahl notes, one of the long-standing points of friction is "the military's unbending insistence on the appearance of uniform bodies" (p. 252). Here, the professor, of course, is referring to years and years of prohibitive grooming standards or dress exemptions. The most well-known standards and exemptions are beards for Sikhs and yarmulkes for Jews. In 2014, DoD took additional steps to encourage commanders to give members of various religious groups the latitude to practice their beliefs and authorized beards, for instance, as long as they did not disrupt good order and discipline.

The only criticism I have about the book is that, frankly, it would have been interesting to read more about the role of the chaplaincy in the past twenty years. Stahl stays away from detailed analysis of anything after Vietnam. I suppose, however, that the Afghanistan

and Iraq wars deserve their own books on how religion and the chaplaincy shaped servicemembers who served in those conflicts. Also, as noted earlier, this is a scholarly work—it is detailed, includes extensive bibliographic notes, and, thankfully, has a fine index. Stahl's work is a great addition to any military chaplain's library and valuable to the military historian interested in understanding how sometimes the society that military members serve affects them in the most basic of human spheres—the spiritual and religious ones.

Ironically, Stahl's book shows that for religion, the military, and the men and women who are bound by a creed and worship something greater than themselves, the relationship among them is one that is always changing and evolving—sometimes contentiously. To paraphrase Stahl, the chaplaincy—a point of tension between church and state—will be a battleground in the future, as it has been in the past.

CHRISTOPHER NELSON



The 1st Infantry Division and the US Army Transformed: Road to Victory in Desert Storm, 1970–1991, by Gregory Fontenot. Columbia: Univ. of Missouri Press, 2017. 526 pages. \$36.95.

Retired U.S. Army colonel Gregory Fontenot's excellent book details the transformation of the Army's famous 1st Infantry Division—"the Big Red One"—following the end of the Vietnam War and culminating in its combat success in the First Gulf War. Fontenot, a retired U.S. Army armor officer, is well qualified to write this book, having served in the division, including command of the 2nd Battalion, 34th Armor

before and during DESERT STORM. As the former commander of the Army's Battle Command Training Program (now called the Mission Command Training Program), he is an expert on collective military training. He is also a coauthor of the Army's initial history of the more recent Gulf War, *On Point: The United States Army in Operation Iraqi Freedom* (Naval Institute Press, 2005).

Fontenot's latest book, *The 1st Infantry Division and the US Army Transformed*, begins with an Army racked with training and disciplinary problems at the end of the Vietnam War. Fontenot describes how senior Army leaders responded with a strategy designed to reestablish military standards by improving training programs and professional military education for officers and noncommissioned officers (NCOs) alike. Central to this was the development of the National Training Center (NTC) at Fort Irwin, California. Located on a site larger than the state of Rhode Island, the NTC is a world-class training center with a robust opposing force, instrumented ranges, sufficient equipment, and a professional cadre of observer-controllers who watch every action throughout the training rotations. The adoption of and adherence to a rigorous and thorough after-action review process enables those participating in the training to improve on every aspect of their performance. Functioning not only as a training center that duplicates near-combat conditions for brigade-sized Army units, the NTC also integrates other service elements into its training rotations.

Fontenot then focuses his book on detailing the planning and preparation that enabled the 1st Infantry Division—as well as other combat units—to deploy successfully from the United States to

Saudi Arabia during the DESERT SHIELD buildup of 1990. He does not shy away from discussing the matériel shortcomings and the significant logistical challenges encountered in achieving this unprecedented deployment of soldiers, vehicles, equipment, and supplies into the theater of operations.

As DESERT SHIELD prepared to become DESERT STORM, the book explores how senior military leaders wrestled with operational planning for the attack on and defeat of the Iraqi military. With the commencement of military operations, Fontenot discusses DESERT STORM from the operational and tactical-level perspectives of the VII Corps commander, Lieutenant General Fred Franks; the 1st Infantry Division commander, Major General Thomas G. Rhame; and numerous brigade, battalion, and company commanders. Fontenot especially is attentive to identifying by name the NCOs and soldiers of the division, and highlights their many individual contributions to the unit's collective success as he follows the 1st Infantry Division through the course of the war.

Fontenot provides similar detail in his consideration of the very real problems faced at the operational-strategic and

strategic leadership levels—where the most senior decision makers were hundreds, even thousands, of miles from the action on the battlefield's frontages. Some of these commanders' expectations were frustrated by the battlefield's ever-present "friction," famously described in Carl von Clausewitz's classic study *On War*. Indeed, lessons drawn from Clausewitz and other military philosophers are peppered throughout the book. Fontenot uses these historical touchstones to validate the study of military history and its continued operational relevance.

I heartily endorse this well-written and well-researched analytical study of the experiences of the 1st Infantry Division. It is a success story that provides invaluable insight into the training renaissance the U.S. Army experienced following the Vietnam War—a transformation that led directly to the successes of Operations DESERT SHIELD and DESERT STORM. This insight speaks to ongoing questions about military education and training as the nation continues to wage a war on terror.

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RUNNING SILENT AND ALGORITHMIC

The U.S. Navy Strategic Vision in 2019

As of January 2019, the U.S. Navy does not possess a coherent, public, strategic vision.¹ The official statement of strategy, or the Navy's *strategic concept*, to use a term inspired by the late Samuel P. Huntington's term, remains *A Cooperative Strategy for 21st Century Seapower: Forward, Engaged, Ready* of March 2015, whose acronym is *CS21R* (*R* for *revised*).² The Department of the Navy (DON) leadership has never declared *CS21R* to be superseded, nor has anything been published to supplant it.³ However, *CS21R* was written to support (and possibly shape) the foreign policy proclivities of the administration of President Barack H. Obama; its predecessor document, *CS21* of October 2007, was released during the administration of President George W. Bush. Both of these presidents endorsed engagement with the international community (albeit in contrasting forms).⁴ The public statements of President Donald J. Trump appear to indicate that some of the principles articulated in *CS21R* may no longer be a good fit, and indeed the emergence of an international system dominated by great-power competition is now more apparent. Outsiders who study the policies of the U.S. Navy are well aware of this disconnect.⁵

Yet the U.S. Navy does, in fact, have a strategic vision that reflects the tenets of former Secretary of Defense James N. Mattis's *National Defense Strategy (NDS)*. Within the Chief of Naval Operations staff (OPNAV), this strategic document has been referred to as "the Navy's response to the *NDS*" or "the Navy's contribution to the joint force." Like the *NDS*, it is classified "Secret" and not available publicly. Unlike the *NDS*, however, the Navy document does not have an unclassified summary, and there is little indication that one eventually will be prepared.

If the Navy's strategic vision is not available publicly, how can we make sense of the service's future policies, resource requirements, dispositions and deployments, and budget submissions? Likewise, how can the U.S. Navy convince the

American people—and obviously the political decision makers—of the validity and logic of its course? How do we know what the naval leadership intends? In the spirit of the descriptions (and hype) of current discussions of artificial intelligence (AI), we can apply human intelligence by analyzing the sum of what can be described metaphorically as a complex algorithm. In other words, we can combine the current white papers and program guidance(s) of the Chief of Naval Operations (CNO) and Secretary of the Navy, along with related official and semiofficial sources, to generate an approximate outline of the U.S. Navy's strategic focus.⁶

STRATEGIC VISION BY ALGORITHM

Included in this algorithm are (1) the *2018 National Defense Strategy* and its publicly released *Summary*; (2) *CS21R*, which lays out what remains the official (DON) strategy but appears overtaken by events and out of sync with presidential guidance; (3) three white papers that provide general direction from the current CNO, Admiral John M. Richardson, USN; (4) remnants of the officially superseded *Air-Sea Battle*, a victim of joint ideology; (5) the report to Congress from an officially unofficial Navy future fleet architecture study team; (6) a numerical goal—355 ships—that appears largely in the rhetoric of senior officials; and (7) a book-length monograph attempting to define the current Navy in terms of naval war fighting that was commissioned by a previous CNO but released only weeks before his retirement (and thus is of questionable authority). Unlike the seven samurai (or seven gunfighters) of legend and film, these seven share a similar cause but do not necessarily fight well together.

In addition to these seven items there are statutory reports to Congress, such as the thirty-year shipbuilding plan and the Secretary of the Navy's annual report, from which can be gleaned particular details or other clues about the Navy's navigational track.⁷ Additionally, as previously noted, classified top-level guidance or guidances from the Secretary of Defense exist—including the *2018 NDS*—that cannot be ignored and, under Secretary Mattis, shaped (and changed) the Navy's approach to building its vision.

Meanwhile, the U.S. Navy also has its classified guidance prioritizing its resource requirements for its program objective memorandum (POM) submission to the defense budget.⁸ This strategic planning guidance, long-range planning guidance, Navy strategic plan for program objective memorandum, or simply guidance (the name changes with CNOs) is used by Navy program analysts and resource sponsors in lieu of translating a loftier strategic vision from strategy-speak to programese.⁹ The current Chief of Naval Operations guidance (CNOG) for the fiscal year 2020 program objective memorandum actually was written ahead of the then-under-draft "response to the *NDS*." So, in fact, the

SEVEN PRIMARY SOURCES FOR DETERMINING NAVY’S STRATEGIC VISION

	Document Type	Source	Release Date	Status
1	Secretary of Defense guidance	<i>Summary of the 2018 National Defense Strategy (Summary NDS)</i>	2018	Dominant joint/DoD guidance
2	Preexisting strategic vision	<i>A Cooperative Strategy for 21st Century Seapower: Forward, Engaged, Ready (CS21R)</i>	March 2015	Current Navy official vision
3	Fleet design guidance from current CNO Richardson	a. <i>Design for Maintaining Maritime Superiority, 1.0 (Design 1.0)</i> b. <i>The Future Navy</i> c. <i>Design for Maintaining Maritime Superiority, 2.0 (Design 2.0)</i>	January 2016 May 2017 December 2018	Updated by 2.0 In effect Affirms majority of 1.0; adds specific guidance
4	<i>Air-Sea Battle</i> remnants	a. Admiral Greenert, USN, and General Mark Welsh, USAF, <i>Breaking the Kill Chain</i> b. Air-Sea Battle Office, <i>Air-Sea Battle: Multi-service Collaboration to Address Anti-access and Area Denial</i> c. Hutchins et al., “Joint Concept for Access and Maneuver in the Global Commons,” <i>Joint Force Quarterly</i> , no. 84 (1st Quarter 2017)	2013 May 2013 2017	Publicly subsumed by Joint Access and Maneuver in the Global Commons (JAM-GC) joint concept paper (however, JAM-GC is applicable only tangentially to antiaccess challenges)
5	Navy Project Team report to Congress (N8 representative lead)	<i>Report to Congress: Alternative Future Fleet Platform Architecture Study</i>	October/November 2016	Overtaken by events and 355 number?
6	Directive for 355-ship Navy	<i>Executive Summary, 2016 Navy Force Structure Assessment (FSA), 14 December 2016</i>	December 14, 2016	2018–19 FSA is under way
7	Former CNO Greenert’s handbook on Navy enduring attributes	<i>How We Fight: Handbook for the Naval Warfighter</i>	July 2015	Unclear and unpublicized

programming transliteration actually appeared (within the OPNAV staff) prior to the written strategy narrative.¹⁰

In a well-planned deployment, all these sources would synchronize to create a whole greater than the sum of their parts. Alas, conflicting perceptions of the post–post–Cold War world and rival political and bureaucratic ambitions have created crosscurrents that subtract as well as add. For example, some of these documents were written under the assumption of increased defense resources, whereas the midterm election of November 6, 2018, led to new House Armed Services Committee leadership that has been warning of leaner defense budgets.¹¹

The intent of this article is to sum the algorithm and provide an outline of the U.S. Navy's current service strategic vision.

DOES IT REALLY MATTER?

Before describing each of the seven algorithmic inputs, we first need to deal with the question whether having a public USN strategic vision really matters. To the naval analyst operating in fleet commands, or even in the trenches of the Pentagon, and other navalists in general, the probable answer is “not really.” As Admiral Carlisle A. H. Trost, USN (CNO, 1986–90), stated, “Over the years our Maritime Strategy has been very much like the British Constitution—unwritten but thoroughly understood by those who practice it.”¹² Indeed, for those who serve in the fleet, the objectives of deterring war, maintaining U.S. access to the materials and markets of international trade, intervening in crises when so ordered, fighting terrorist groups, and providing a sovereign, forward presence are quite evident. For those who work on future Navy programs and budget, the CNOG and other classified documents are more directly useful.¹³

Ultimately, however, it is not the Navy or even the Secretary of Defense that actually determines Navy programs and budget, but rather the members of Congress as representatives of the American people. The fact that congressmen who normally are supportive of the naval services recently have expressed their desire that the Navy articulate a clear vision should be of concern to the service.¹⁴ Yet, taking its cue from Secretary of Defense Mattis, who showed a penchant to discourage “too much” openness to media, the Navy has continued to run (relatively) silent.¹⁵

There are at least three likely explanations for the secretary's caution with the media. First is the official reason: too much information should not be transmitted to potential enemies. But in the case of the U.S. Navy, whose strategic predilections were made clear through media speculation (and some public discussion) of the air-sea battle concept (circa 2009–15), that reason seems a bit implausible. The Chinese Communist Party (CCP) and others know toward whom the Navy's operational planning is directed.¹⁶ Second might be his desire that the services tightly conform to the jointly focused *NDS*. Since the Navy is known for its independently derived strategic visions—primarily on the basis of applying its own traditional operating concerns against changing conditions and emerging threats—this seems a more plausible concern. Third, more speculatively, is that the Secretary of Defense wants to ensure that the Navy—along with the other services and the rest of the Department of Defense (DoD)—does not get crosswise with future tweets and other sudden proposals emanating from the White House.¹⁷ The president announced his desire for a 350-ship Navy at approximately the same time as he announced his proposals for a reduced federal

budget.¹⁸ Quiet might be prudent at this particular moment. However, silence over its service visions never has seemed to help the Navy's long-term viability in the past, particularly in terms of budget and force structure.

THE CASE OF THE *MARITIME STRATEGY*

The public release of the Cold War–era *Maritime Strategy* in 1986 is one example of how public discussion—particularly by influential academics, with all the disputation and opposition that implies—actually improved the vision, raised public awareness of the Navy's mission, and generated considerable congressional interest.¹⁹ With strong presidential interest and support for the strategy (which justified the political goal of a six-hundred-ship Navy), the public discussion served the Navy's institutional interests.²⁰ Primarily through media reports of reactions and resulting controversies, American citizens who might never have given their Navy a thought became aware that the Navy was doing something important.²¹

Additionally, a case can be made that public release of the *Maritime Strategy* actually heightened Cold War conventional deterrence, since the cacophony of debate reinforced a belief in the minds of Kremlin decision makers that the U.S. Navy / Marine Corps actually would employ its major forces in carrying out audacious and high-risk attacks on the Soviet periphery in the High North and Pacific in the event of a war in central Europe.²² If the U.S. Navy was willing to sail its carrier battle groups (in conjunction with its attack submarines [SSNs]) in the face of long-range Soviet bombers and attack aviation in an attempt to penetrate ballistic-missile submarine (SSBN) bastions and destroy the Soviet fleet within home waters, what else might it attempt?²³

Interestingly, there are continuing indications that, similarly, analysts working for the CCP today frequently are concerned that they might miss critical policy nuances revealed in cacophonous American public debates, even while many American decision makers treat that cacophony as background noise.²⁴

VISION AMID AUSTERITY

There is yet another purpose for creating and updating a clear strategic vision—but one that naval decision makers hesitate to contemplate, lest their fears become reality. A clear strategic vision helps to maintain the motivation and morale of naval personnel and public support for the naval services during times of fiscal austerity. Samuel Huntington identified this factor in his argument for a naval strategic concept in the 1950s. Huntington noted that “if a service does not possess a well-defined strategic concept, the public and political leaders will be confused as to the role of the service . . . and apathetic or hostile to the claims made by the service on the resources of society.”²⁵ At that time, both a shrinking (or, rather, already shrunk) budget and the arguments of the U.S. Air Force

threatened to strip the U.S. Navy and Marine Corps of their wartime missions. Initially, the DON seemed unable to articulate its purpose in the nuclear age. After all, having defeated imperial Japan in the greatest joint campaign in military history, the service's relevance seemed evident—at least to the Navy itself. However, by accepting the need to develop and promulgate a strategic concept understandable to the public as well as political decision makers, Navy and Marine Corps leaders were able to reestablish an internal sense of purpose as well as regain public and congressional support. Having a vision that was both internal and public was a particular priority under the extended tour of duty of Admiral Arleigh A. Burke (CNO, 1955–61). As an internal guide, an unclassified Naval Warfare Publication (NWP) 1, *Strategic Concepts of the U.S. Navy*, was created as the foundation for all other naval publications. It was updated routinely until its quiet demise in the 1990s.²⁶

The post-Vietnam Navy (circa 1974–81) was racked by personnel problems, arguably because of both reduced funding for readiness and a lack of a motivating sense of purpose. The creation of the *Maritime Strategy* was instrumental in regaining this sense of purpose.

There are strong indications that the promise of a 350- or 355-ship Navy by the Trump administration—whatever its degree of commitment—may give way to a reduction in the overall defense budget under new Democratic leadership in the House of Representatives. There had been previous stirrings among fiscal hawks in both parties, and Secretary of Defense Mattis never committed himself to the 355 number.²⁷ Thus, the Navy's anticipated increase actually may turn into a winter of decreased resources.²⁸ Such winters are times when strong and clear vision seems to be needed most.

In sum, a clear, publicly articulated Navy strategic vision has mattered—for congressional and public support, as well as for internal morale and sense of purpose. Its absence does have effects.

NDS AND THE NAVY

If *NDS* is the driver of the current Navy self-vision, what is in the document that directly affects the Navy?

Working from the unclassified *Summary of the 2018 National Defense Strategy of the United States of America* (hereafter *Summary NDS*), one first observes that its strategic change toward a “balance of power” approach to deterrence should mean a tilt toward the Navy's traditional missions. The *Summary NDS* states unequivocally, “Inter-state strategic competition, not terrorism, is now the primary concern in U.S. national security.”²⁹ Although the U.S. Marine Corps, Naval Special Warfare (SEAL), and explosive ordnance disposal units and naval tactical aviation were involved deeply in countering jihadists—who also occasionally

were targeted by Tomahawk-firing ships and submarines—most of the blue-water Navy had but tangential roles in countering terrorism, even if one counts the Navy individual augmentees in the wars in Afghanistan and Iraq.³⁰ The Navy's primary purposes—of ensuring access to the markets and materials that constitute international trade and deterring, fighting, or facilitating power projection in interstate war—were not part of what former Defense Secretaries called “the wars we are in.” If interstate conflict is now “where it’s at,” with the primary list of likely opponents being represented by the 2+2 construct of the People’s Republic of China (PRC) and Russia, followed by Iran and North Korea, then the Navy has to be a primary fighting component, given that all the above are separated from the United States by oceans.³¹

However, as one reads through the *Summary NDS*, a subtle ground force-centric approach to strategy can be detected. For example, the global operating model for joint force posture is described by the four terms *contact*, *blunt*, *surge*, and *homeland* (CBSH).³² The first three are general descriptions of phases of a land campaign that do not have exact naval equivalents. Would forward-deployed naval forces constitute a contact layer, or are they a standing blunt force? Both terms imply a classic ground engagement among armies, whereas modern naval combat is described most persuasively as “a struggle for the first salvo” (even if that is a Cold War Soviet concept) or an attempt to “attack effectively first” (in the words of Captain Wayne P. Hughes Jr., USN [Ret.]).³³ The U.S. Navy never actually has surged in a war against a powerful naval opponent. In the World War II Pacific War, most high-value units were already at sea or within range of the enemy; instead, the surge occurred in industrial production and mobilization—a feat that many doubt could be replicated today. Likewise, the maritime defense of the homeland is largely the responsibility of the U.S. Coast Guard, although SSBNs remain the most survivable leg of strategic nuclear deterrence, and naval theater ballistic-missile defense, along with Aegis Ashore, could be integrated into national missile defense (a mission the Navy has avoided). It simply is tough to fit naval war fighting into the CBSH formula—a fact that may have deeper implications. One can shoehorn naval force structure into the formula for comparative modeling with land forces, but only by “fuzzing” their designed operational employment.

Following a fairly traditional description of objectives, strategic objectives, and desired capabilities—none that would be completely out of place in a Cold War document—the *Summary NDS* sets goals of “building a more lethal force” and “modernizing key capabilities” in such areas as “forward force maneuver and posture resilience”—presumably a Navy forte. Although the *Summary NDS* calls for prioritizing investment in forces that “can deploy, survive, operate, maneuver, and regenerate in all domains while under attack,” the sole detail offered

for this force investment is the effort to transition from “large, centralized, un-hardened infrastructure to smaller, dispersed, resilient, adaptive basing.”³⁴ Since the Navy has advertised itself long and loudly as the strategic alternative to large, centralized, unhardened (land) infrastructure, one might assume that unique naval capabilities might be mentioned briefly at that point in the *Summary NDS* document—but they are not.

What does the absence of the quite standard praise of naval forces (even in joint documents) as maneuverable and dispersed sovereign territory not fettered to land infrastructure and capable of crisis response (blunting, perhaps?) mean? One merely can speculate, but perhaps the Secretary of Defense really did not believe that the fleet is actually as effective or survivable in an antiaccess scenario (or the current preferred term of *contested environment*) as the Navy perceives itself to be. In any event, the *Summary NDS* does not contain a lot of hooks on which the Navy can hang its narrative hat—unless it wants to challenge joint ideology. A search of the *Summary NDS* failed to detect a single use of the word *ocean*.³⁵

The *Summary NDS* does devote a full two pages (out of eleven total) to DoD’s desire to “strengthen alliances and attract new partners.”³⁶ It focuses on three elements: “uphold a foundation of mutual respect, expand regional consultative mechanisms and collaborative planning . . . and deepen interoperability.” Regional alliance and partnership networks are delineated (*Indo-Pacific*, NATO, Middle East, Western Hemisphere, and Africa). In this, the *Summary NDS* could fit easily into an Obama or Bush (either forty-one or forty-three) administration document. It also, amazingly, could fit within *CS21R*—except for a few telling details in the “uphold” element that tie back to Trump administration themes, including accountability.

The first of those details alluding to the Trump administration’s particular viewpoint is the recognition that “alliances and coalitions are built on free will and shared *responsibility*” (emphasis added). Then, in a possible jab at previous administrations (whether stocked with neoconservatives or liberal internationalists)—and, in truth, a practical and significant change—the summary proclaims: “While we will unapologetically represent America’s values and belief in democracy, we will not seek to impose our way of life by force.”³⁷ But even as strongly, it states that “we expect allies and partners to contribute an equitable share to our mutually beneficial collective security, including effective investment in modernizing their defense capabilities.” Those are not firm requirements found in *CS21R*. It is hard not to perceive that “accountability” is the main message of the *NDS* cooperation section and that the remaining standard alliance/partnership recitation in no way implies that America is absolutely dependent on its alliance structure or

that it expects any limits on its free will. In short, *CS21R* is built around alliances, partnerships, and (obviously) cooperation; the *NDS* is not.

Inclining one toward the cynical view that the two pages extolling cooperation are simply standard fare is the fact that they are followed by a concluding section titled “Reforming the Department for Greater Performance and Affordability.” That goal has remained beyond the power of mere humans (including Defense Secretaries) nearly forever.

THE STATUS OF *CS21R*

As previously noted, officially the Navy’s strategic vision remains *A Cooperative Strategy for 21st Century Seapower: Forward, Engaged, Ready* of March 2015, much better known by its acronym, *CS21R*. *CS21R* is a revision of the original *CS21*, signed by the three chiefs of the sea services (Marine Corps, Navy, Coast Guard) in 2007. No successor has replaced it; no naval leader has publicly repudiated it.

Although the original *CS21* was released under Admiral Gary Roughead (CNO, 2007–11), it was largely a confirmation of the concept of Admiral Michael G. Mullen (CNO, 2005–2007; Chairman of the Joint Chiefs of Staff, 2007–11) of a *one-thousand-ship Navy* (without using that term), consisting of the U.S. fleet and those of its allies and partners who would cooperate to ensure security at sea in accordance with international law and guided by the provisions of the United Nations Convention on the Law of the Sea (UNCLOS).³⁸ Thus, the changes in the world environment between 2007 and 2015 (primarily the expansion of a potentially hostile People’s Liberation Army [PLA], along with the definite hostility of Russian president Vladimir Putin) necessitated a revision that—while maintaining an emphasis on global partnerships—expands its discussion of U.S. naval missions or functions and a fleet design that describes the capabilities needed to carry out these functions. One could invite the PLA Navy (PLAN) to participate in the U.S. Navy’s annual RIMPAC exercise, but that would not mean the Chinese would honor any international tribunal ruling on law of the sea violations. Yet the flashing light of the one-thousand-ship Navy still shines through both texts; it is dimmer in the second (*CS21R*) only because the additional section was added to discuss naval missions and general force-design goals, making the revised document twice as long as the original.

Consider the contrast. The *Summary NDS* devotes two of eleven pages to alliances, partnerships, and international cooperation (18 percent of the document); *CS21R* devotes almost twenty of thirty-seven pages to alliances, partnerships, and international cooperation (54 percent). This provides the initial clue that the *CS21R* does not quite fit the Trump administration’s focus on deterring (or, if

necessary, winning) great-power conflict with China or Russia. *CS21R*'s stress on cooperation always betrayed an optimistic view of the future roles of China and Russia in supporting the current international system (instead of undermining it) and often referred to their roles as "responsible stakeholders." In contrast, the *National Security Strategy of the United States of America* of December 2017—parent of the *NDS*—envisions a world of great-power competition in which cooperation cannot be assumed. Quite simply, *CS21R* is out of sync with current higher directives.

So, what can be salvaged? The second half of *CS21R*, beginning with "Seapower in Support of National Security," contains the traditional description of naval missions, including deterrence, sea control, power projection, and maritime security.³⁹ But it also adds a fifth mission that had not appeared previously in other higher-level documents: "all domain access," a focus on defeating the antiaccess "reconnaissance strike networks" of potential opponents.⁴⁰

To achieve all-domain access requires the U.S. Navy, U.S. Marine Corps, and U.S. Coast Guard (to whatever extent it can) to commit to investments in battlespace awareness (persistent surveillance), assured command and control (resilient networks that can fight jamming), cyberspace operations, electromagnetic-manuever warfare (EMW) (i.e., electronic warfare spread across domains), and integrated fires. This is certainly an appropriate list of capabilities necessary for countering antiaccess strategies. Additionally, it is similar to such lists contained in all subsequent USN public documents. If one added unmanned systems, machine learning, and AI as means of achieving the above capabilities, one would have a depiction of the Navy's current desired investments. These desired capabilities permeate discussions of the Navy's future fleet designs.

THE CNO, THE *DESIGN FOR MAINTAINING MARITIME SUPERIORITY*, AND *THE FUTURE NAVY*

The current CNO, Admiral Richardson, has released a series of three white papers that describe a design for maritime superiority and the characteristics of the future navy. Although they would seem disconnected from some of the premises of *CS21R*, the first document, *A Design for Maintaining Maritime Superiority, Version 1.0* (hereafter *Design 1.0*), describes itself as a step "along a future course to achieve the aims articulated in [*CS21R*] in this new environment."⁴¹ (Notably, the subsequent *Design 2.0* does not mention *CS21R*.)

Design 1.0

Design 1.0 is a total of eight pages that are intended to "guide our behaviors and investments, both this year and in the years to come."⁴² However, it also states that "[m]ore specific details about programs and funding adjustments will be

reflected in our annual budget documents,” undoubtedly referring to, among others, the CNOG.

Design 1.0 begins by describing the U.S. Navy’s mission in the joint-approved, domain-specific fashion: as conducting “prompt and sustained combat incident to operations at sea.” But it subtly broadens this to include “protect[ing] America from attack and preserv[ing] America’s strategic influence in key regions of the world,” presumably through persistent naval presence. It follows with a description of the “strategic environment,” which links Rear Admiral Alfred Thayer Mahan’s articulation of the need for a navy that could guarantee access to international trade and overseas markets and materials to the technological changes driving prosperity. Later in the document, the CNO acknowledges the fundamental truths of the nature of war: “a violent human contest between thinking and adapting adversaries for political gain.” He cites the thinkers whose wisdom has shaped the Naval War College course curriculum: Mahan (obviously), Thucydides, Clausewitz, Sun Tzu, Mao (strangely), and Corbett.⁴³

Design 1.0 describes the strategic environment in terms of three trends, all of which have been articulated in previous Navy documents: increased international trade across seas, and potentially through the Arctic; a continually growing global information network; and increased rates of technological creation and adoption, including robotics, energy storage, three-dimensional printing, low-cost sensors, genetic sciences, and AI.

Adapting is the key point, and the CNO sees a peacetime competition in strategic technology among global powers: the United States, China, and Russia. This is a view that CNO Richardson has espoused frequently since the beginning of his tenure, before the election of President Trump, and in sync with proponents of the Third Offset Strategy such as former Deputy Secretary of Defense and Under Secretary of the Navy Robert O. Work (albeit not in the same words). Unlike *CS21R*, *Design 1.0* very clearly refers to China and Russia, pointing out that the “Russian Navy is operating with a frequency and in areas not seen for almost two decades, and the Chinese PLA(N) is extending its reach around the world.” (The +2 of North Korea and Iran also are mentioned, but very briefly.) Here is where technological advancement links with the Navy’s desired capabilities, as identified in the second half of *CS21R*; they are elements of the strategic competition with two regional powers that have antiaccess networks.

CNO Richardson does not use his predecessor’s *assured access* term, and he has made his dislike of *antiaccess/area-denial (A2/AD)* terminology evident.⁴⁴ Yet it would seem that the Navy’s goal is to adapt emerging technologies so as to retain (or regain) the ability to penetrate opponents’ A2/AD networks. *A2/AD* remains a regularly used term throughout DoD.

Design 1.0 also lists the CNO's view of Navy "core attributes of our profession" as consisting of "integrity, accountability, initiative, and toughness." These are distinct from the also-cited Navy core values of honor, courage, and commitment. In the CNO's guidance, "[i]f we abide by these attributes, our values should be clearly evident in our actions."⁴⁵ Although his predecessor expressed these attributes somewhat differently, the desire to define naval attributes provides a link to the quietly released *How We Fight: Handbook for the Naval Warfighter*, document number seven in our algorithm, of Admiral Jonathan W. Greenert, USN (CNO, 2011–15).

The heart (and conclusion) of *Design 1.0*, however, is found in three pages describing the CNO's "four lines of effort," which are his objectives that are intended to guide current Navy decision-making. Since each of the four lines of effort is individually color coded, it has become common for Navy staff officers to explain their projects or tasks in the form of "it supports purple (or blue, green, or yellow)."

The first of the four lines (blue) is to "strengthen naval power at and from sea," an obvious and continuing goal.⁴⁶ Within this goal resides a prioritization of programs to align "our organization to best support generating operational excellence." First is to "[m]aintain and modernize the undersea leg of the strategic deterrent triad," described as "foundational to our survival as a nation." Indeed, CNO Richardson consistently has identified the forthcoming *Columbia*-class SSBN as his priority acquisition program.⁴⁷

The second program priority in the blue line is to develop and test new concepts through fleet exercises for war fighting in "highly 'informationalized' and contested environment[s]" in "partnership with the Marine Corps." Since *contested environment* is a euphemism for A2/AD, one can speculate that this is intended to patch over some of the fraying between the two naval services that occurred during the development of the air-sea battle concept. The third priority calls for expansion of the EMW capabilities identified in *CS21R*.

This is followed by a related fourth priority: to "explore alternative fleet designs, including kinetic and non-kinetic payloads and both manned and unmanned systems" capable of operating in the "highly 'informationalized' environment." Indeed, as we shall see, this is a task to which OPNAV is devoting a considerable amount of effort.

The two final tasks of the blue line are organizational examinations of U.S. Fleet Forces Command (FFC); Commander, Pacific Fleet; and OPNAV itself. In reality, the comprehensiveness of this task has been impacted by the more immediate studies of the western Pacific warship collisions. However, a Second Fleet command has been created out of operational elements of FFC.

The second line of effort (green) is to “achieve high velocity learning at every level.”⁴⁸ Tasks in this line include the incorporation of best practices, expanding the use of “learning-centered technologies, simulators, online gaming, analytics and other tools,” and “[o]ptimiz[ing] the Navy intellectual enterprise.” Of personal concern to the CNO is his desire to make Navy wargaming—a learning tool for which the service is justifiably famous—more iterative, possibly via the use of AI or AI-assisted systems.

The third line of effort (yellow), to “strengthen our Navy team for the future,” focuses on improvements in personnel management and leadership, including information-technology learning in a Sailor 2025 program.⁴⁹ It does not discuss radical changes to personnel accessions, however. Most of the language of yellow has been used before.

The fourth line of effort (purple) is to “expand and strengthen our network of partners.”⁵⁰ But international partnerships (à la *CS21R*) are but a small piece of this effort, while partnerships with other services and agencies (including future planning and assessments), private research and development labs, and commercial industry are emphasized.

Design 1.0 concludes with an exhortation for all to adopt a sense of urgency: “We will remain the world’s finest Navy *only* if we all fight each and every minute to get better. Our competitors are focused on taking the lead—we must pick up the pace and deny them. The margins of victory are razor thin—but decisive!”⁵¹ No one could deny that the CNO sees the U.S. Navy locked in a strategic and technological competition with very capable opponents.

The Future Navy

However, by 2017, CNO Richardson, possibly concerned that his Navy continued to lack his sense of urgency, issued a supplemental white paper, *The Future Navy*. There have been some contending interpretations of the impact and importance of *The Future Navy*.⁵² In its defense, it is not designed to impart new direction or tasking beyond that already laid out in *Design 1.0*. Rather, as noted, it is intended to ratchet up the intensity of the Navy’s analytical efforts for determining how to integrate unmanned systems and other technological developments.

In part, *The Future Navy* white paper likely was a reaction to several future force architecture studies that were performed at the direction of Congress as part of defense legislation for fiscal year 2016 (FY16). Congress (led by the late Senator John S. McCain) required three alternative studies of future Navy force structure (for the 2020–35 period) to use in checking the Navy’s thirty-year shipbuilding plan. The first was by an independent study group made up of Navy staff members from OPNAV N8, Fleet Forces Command, and the Naval War College, and other naval analytical organization representatives. This report was not

staffed by the normal OPNAV process and was not endorsed by a cognizant flag officer but simply was forwarded to Congress by the CNO along with the other two alternative studies (via the Secretary of the Navy) without endorsement. This is the officially unofficial unclassified Navy Project Team report (source number five in table 1) that will be described later.⁵³

At a total of nine pages, *The Future Navy* begins with its conclusions up front concerning the FY16 studies: (1) “the nation needs a more powerful Navy, on the order of 350 ships, [but] that includes a combination of manned and unmanned systems”; (2) “more platforms are necessary but not sufficient. The Navy must also incorporate new technologies and new operational concepts.” This is followed by a section header intended to get across the sense of urgency: “Faster and More Complex. And Faster.”⁵⁴

The Future Navy does add statements of the value of naval forward presence back into the dialogue, pointing out that the “presence of capable platforms enables naval forces’ inherent responsiveness” and that “U.S. ships are sovereign American territory” and “are self-sufficient when they respond.” However, this is couched as enabling the U.S. Navy (and Marine Corps) to be “full partners with the Army and Air Force as conflicts unfold,” being “often first on the scene, and continu[ing] to preserve U.S. interests in the long term, after the conflict subsides, through continued and routine operations forward.”⁵⁵

The Future Navy also attempts to clarify that, regardless of whether the optimum fleet size is 355 ships, numbers of ships do matter, because “[t]he number of ships in the Navy’s fleet determines where we can be, and being there is a key to naval power.”⁵⁶ In other words, a modern, highly capable warship may have the firepower of two less capable vessels, but—unlike the pair—that one ship cannot be in two oceans at the same time. Quantity does have a quality that quality alone cannot replicate.

The remaining text of *The Future Navy* concentrates on the need for greater force connectivity (even while dispersed), technological advances such as those identified in *Design 1.0*, and unmanned and autonomous systems as both extensions of existing platforms and sources of new capabilities.

One observation that does appear in *The Future Navy* and not in the other sources discussed here is CNO Richardson’s conviction that the defense industrial bases can increase their speed of production to build a larger fleet faster than some analysts suggest. “Multiple shipbuilding and aircraft production lines are ‘hot’—currently producing”—but “[t]hey can do more. . . . Buying aircraft carriers at the economically-optimal rate—three or four years apart instead of the current five or more years—will not only get us a more powerful fleet faster, but also will save considerable money. . . . [Likewise,] an analysis of the industrial base shows we could build up to seven additional destroyers in the near term,

and up to 14 more small surface combatants.”⁵⁷ Similar industrial base statistics are cited for other ship types, adding to a total of “29 more ships and almost 300 more aircraft over the next seven years than our current plan.” Therefore, if there is the will, the sense of urgency can be answered with action.

Design 2.0

In December 2018, the CNO released *A Design for Maintaining Maritime Superiority, Version 2.0*. Advance CNO briefings about the document indicated that it would note both areas in which progress had been made and where more or different types of progress would be needed. It does both, and, more importantly, it attempts to balance an ever-increasing sense of urgency against the need for “sustainability”—the avoidance of “overextension in the short- and long-term.” *Overextension* is defined as “the pursuit of ends that are beyond the ways and means of the force.”⁵⁸ Although the remarks on overextension appear in a section entitled “Our Response” (to the challenges of competition with China and Russia), it is buttressed by an earlier statement on the security environment: “We cannot become overwhelmed by the blistering pace. This is a long-term competition. We must think in terms of infinite, instead of finite, time frames. Only sustainable approaches will prevail.”⁵⁹

Design 2.0 continues the four color lines of effort; however, “yellow” has been changed to “gold.” Their overall substance remains the same, but they are packed with much more detail, which is why *Design 2.0* is twenty pages, whereas *Design 1.0* was eight. The green line of effort is modified significantly from “achieve high velocity learning at every level” to “achieve high velocity outcomes,” which allows for inclusion of very specific acquisition goals that did not appear in the previous version. These acquisition goals include the following: “Award the Future Frigate contract by 2020 to deliver as soon as possible (ASAP). . . . Develop and field an offensive hypersonic weapon by 2025,” and other equally specific items.⁶⁰ There is a bit of irony, however, in having these goals as directives in a CNO-authored document since—as the CNO himself admits—DoD reorganizations in the past three decades have resulted in very limited CNO control over the acquisition process. The program executive officers of Navy acquisition programs largely report to the Assistant Secretary of the Navy (Research, Development & Acquisition), with the Joint Staff and Office of the Secretary of Defense critiquing almost every step along the way.

The green line also splits Navy analytical efforts into a “concept development hub” centered on the East Coast (DEVGRUEAST) and a “capability development hub” centered on the West Coast (DEVGRUWEST). Of the Navy’s advanced educational institutions, the Naval War College would be a core of the former and the Naval Postgraduate School a core of the latter.

Meanwhile, the revised blue line identifies continuing Navy support to recent operational changes: the reestablishment of Commander, Second Fleet in the Atlantic, and the implementation of the dynamic force employment concept outlined in the *NDS* to make warship deployments more situational and less predictable.⁶¹ The gold line adds the establishment of a three-star Director for Warfighting Development (including education, experimentation, and analysis) as N7 in OPNAV. The purple line's discussion of partnerships specifically delineates supporting NATO and maturing Joint Forces Command–Norfolk “as the NATO headquarters for high-end naval operations and warfare in the Atlantic theater.”⁶²

Additionally, the CNO attached two letters to *Design 2.0* as addenda. The first, a “Charge of Command” to commanding officers, clearly reiterates that “[t]he responsibility of the Commanding Officer for his or her command is absolute,” under all circumstances. The second, “One Navy Team,” emphasizes inclusion and diversity within the Navy.

AIR-SEA BATTLE: FROM VISIBLE FOCUS TO UNDER THE RADAR

If broadened beyond its (presumably) exclusive focus on the PLA, the air-sea battle concept that consumed so much of the Navy's intellectual capital (along with some of the U.S. Air Force's) earlier in this decade could make a coherent Navy strategic vision by itself. Similarities to the *Maritime Strategy* are evident. The basic concept was to integrate Navy and Air Force capabilities to deal more effectively with the toughest potential war-fighting challenge of the day: to defeat the PRC's antiaccess strategy and respond to PRC aggression by conducting operations within Chinese-claimed water and airspace, including targeting military forces ashore. In short, it attempted to answer the A2/AD problem.

A detailed argument has been made that the Cold War-era *Maritime Strategy* was itself a counter-antiaccess strategy, with the U.S. Navy and Marine Corps attempting to penetrate the layers of Soviet long-range bombers, cruise-missile-firing submarines, and the Soviet naval fleet to breach the Soviet Union's periphery and take pressure away from NATO's central land front in Europe.⁶³ Ironically, the title *Air-Sea Battle* is a reference to the air/land battle doctrine that the U.S. Army and Air Force fashioned jointly to blunt a Soviet offensive on the central front. Similar to the *Maritime Strategy*, *Air-Sea Battle* acquired a number of influential academic and policy opponents, whose resistance gave the appearance of official doctrine to what, in reality, was a combination of think tank publications and an Air-Sea Battle Office assigned the task of coordinating USN and USAF programs appropriate to an antiaccess scenario in the East Asian maritime and littoral regions.⁶⁴

However, by 2015, the air-sea battle concept was devitalized and finally consumed by joint ideology. It was a very logical approach to containing potential PRC expansion—so logical that it frightened the U.S. Army (which naturally had focused its force structure on “winning the wars we are in”) into believing it could lose its appropriate share of the defense budget. Obviously, no one was contemplating a land war in East Asia. If counterterrorism would no longer be the primary fight for U.S. armed forces, what would be the role of decisive land forces? (At the same time, the Marine Corps—which would have a role in a maritime campaign—became concerned that its permanent partner, the U.S. Navy, might be spurning it for greater integration with the Air Force.) The result of bureaucratic and political pressure was that the Navy–Air Force Air-Sea Battle Office was converted into a joint staff with the inclusion of Army and Marine Corps representatives and outside contractors, under the supervision of the Joint Staff, to develop a concept for joint access and maneuver in the global commons (JAM-GC).

JAM-GC is another document that is classified but whose drafters have discussed it in open-source literature.⁶⁵ However, it is focused on a problem that is different from the air-sea battle concept. Its primary focus—access of military forces into and within the global commons of sea, airspace over the oceans, and space, all of which are not contested seriously—is not the same challenge as the penetration of PRC antiaccess networks, the hardware of which is located largely within sovereign PRC territory.⁶⁶

Thus, the Navy lost control of a concept and narrative that could define its de facto strategic focus: deterring potential PRC aggression by holding at risk China’s antiaccess networks and its protection of its military capabilities and homeland territory, and doing likewise to the potential threats of Russia, North Korea, and Iran. Such an effort would require capabilities to defeat the PLA’s maritime and conventionally armed rocket forces and to suppress its land-based air defenses, hence requiring close Navy / Air Force collaboration. Inclusion of decisive ground forces simply would not seem to be a part of this mission—the approximation of a Cold War *Maritime Strategy* without any central-front battle on land. Such an independent strategic vision of the Navy’s primary war-fighting purpose conflicts with the twenty-first-century version of joint ideology that mandates participation (or at least veto power) of every service in every mission.

Given the reluctance of the Obama administration to identify the PRC as a primary security threat, slipping the premises and operational concepts of *Air-Sea Battle* under the radar in favor of the joint examination of a much more theoretical threat could be justified. However, the Trump administration’s *National Security Strategy* and the *NDS* provide the justification for its resurrection. There is

much in the air-sea battle concept that could shape a naval strategic vision—and, because of the Navy’s focus on the Indo-Pacific region, it already has.

PACIFIC FLEET DOMINANCE OVER NAVAL STRATEGY

Although there is no one public document at which to point, the dominance of the U.S. Pacific Fleet in defining the Navy’s de facto strategic vision is evident and deserves some comment.

The Obama administration’s pivot to the Pacific may have required an adjustment for other U.S. agencies, but the USN pivot occurred prior to the 2006 transformation of U.S. Atlantic Fleet into FFC. The Atlantic’s numbered war-fighting command, U.S. Second Fleet, also was disestablished in 2006. This move could be viewed as a delayed response to the collapse of the Soviet navy (and Soviet Union). The change also was prompted by the conversion of the joint combatant command (COCOM) U.S. Atlantic Command into U.S. Joint Forces Command (JFCOM) in 1999, an obvious indication that American decision makers did not envision a challenge from the Russian navy (or anyone else) in the Atlantic Ocean region.⁶⁷ FFC retained responsibility for training and readiness for Atlantic-based U.S. naval forces but also took a lead position in “providing” naval forces for all COCOMs. Additionally, FFC was assigned “command and control of subordinate Navy forces and shore activities during the planning and execution of assigned service functions in support of the Chief of Naval Operations (CNO).”⁶⁸ This paralleled the tasking of JFCOM to support the Joint Staff. (Ironically, JFCOM was disestablished in 2011 and its functions were transferred back to the Joint Staff.)

The result of the former Atlantic Fleet taking on staff responsibilities that might otherwise be directed by OPNAV was that its focus on naval war planning became diluted in comparison with U.S. Pacific Fleet, which, additionally, has a present potential threat in an expansionist PRC. Because of this circumstance and the force of personality of the commanders, Pacific Fleet increased its influence on naval strategy as a whole, with the creation of *Air-Sea Battle* as but one result. Through a series of articles and statements, and with heavy use of the Navy’s wargaming and analytical assets, Commander, U.S. Pacific Fleet (COMPACFLT), Admiral Scott H. Swift, USN (COMPACFLT, 2015–18), became a primary spokesman not only in identifying the PLAN as the U.S. Navy’s primary “pacing” threat but in elucidating the changes the U.S. Navy would make to meet it.⁶⁹ It became obvious that U.S. Pacific Fleet sought its direction directly from the CNO, not through FFC, and, in turn, sought to influence the CNO’s vision.

With the tremendous expansion of the PLAN, it is logical that the Pacific region would focus and dominate Navy thinking in the same way that imperial Japan did during the interwar years. However, with the reactivation of U.S.

Second Fleet on August 24, 2018, as a subordinate of FFC, it is possible that this dominance eventually will be challenged.

AN OFFICIALLY UNOFFICIAL REPORT TO CONGRESS

The National Defense Authorization Act for FY16 required DoD to furnish Congress with three studies of the composition of the future U.S. fleet that would function as alternatives to the U.S. Navy's thirty-year shipbuilding plan. As previously noted, the first of these studies was conducted by a Navy team consisting of subject-matter experts from naval analytical organizations without the concurrence or endorsement of DON leadership. The other two were conducted by a federally funded research and development center, MITRE Corporation, and an independent think tank, the Center for Strategic and Budgetary Analyses (CSBA, which previously had devoted a considerable amount of its own research to *Air-Sea Battle*).

The three reports took significantly different approaches to evaluating a future fleet. MITRE evaluated requirements against an air-sea approach to defeating the antiaccess "reconnaissance strike network" of the PRC. The result was a set of specific recommendations concerning new capabilities and platforms. CSBA proposed a new concept for naval operations, dividing the fleet between tailored regional presence forces and a powerful maneuver force that would surge to a region of conflict. Meanwhile, the Navy team centered its recommendations on three concepts then under investigation by FFC and Pacific Fleet: distributed fleet lethality; EMW; and distributed, agile logistics.⁷⁰ The visibility and viability of these three concepts have been challenged and their relative prominence has changed since then because of changes in operational Navy leadership. However, it is fair to conclude that they still might be, or eventually will be, aspects of a Navy strategic vision.⁷¹

The guiding premise of the Navy Project Team was that the Navy needs a distributed fleet, which would be created by breaking the current methodology of battle-force deployments centered on an aircraft carrier strike group (CSG, formerly known as CVBG for "carrier battle group") consisting of an aircraft carrier, destroyers as escorts, and associated logistics ships. In contrast, a *distributed architecture* "would field a widely dispersed force, operating in dozens of areas, netted to mass firepower, and supported by robust kill chains and survivable logistics."⁷² The study views the proposed change from CSG-centered operations to a distributed architecture of dispersed forces as a significant change in the Navy's operational strategy (and thereby in its strategic concept or strategic vision). The distributed fleet architecture integrates the three mutually supporting concepts of distributed fleet lethality; EMW; and distributed, agile logistics.

Distributed lethality was a concept championed by Vice Admiral Thomas S. Rowden, USN, former Commander, Naval Surface Forces, and Naval Surface Force, Pacific.⁷³ In its simplest expression, the concept proposed placing offensive weapons on platforms that previously had not carried them—particularly the littoral combat ship (LCS) and, presumably, amphibious warships and combat logistics force ships. Unfortunately, the details for the latter two types of vessels were never elucidated prior to Vice Admiral Rowden’s retirement in February 2018, and choosing a missile for the LCSs took an unexpectedly long time. Vice Admiral Rowden tied distributed lethality to his desire to shift the focus of the surface navy away from the power-projection (strike against land) mission emphasized by *Air-Sea Battle* and toward sea control against the PLAN fleet.⁷⁴ With the change in surface navy leadership, the status of distributed lethality is now unclear.

The EMW concept is described by the Navy team study as promoting “improvements in protected, assured datalinks and communications paths . . . to support a geographically distributed force . . . [including] unmanned vehicles,” as well as providing “soft-kill” of enemy communications and weapons systems.⁷⁵ EMW is also an element contained in *CS21R* and can be considered almost a traditional operational concept for the modern U.S. Navy, since it was clearly a major component of war-fighting operations in previous conflicts.

The third concept on which the study was built—distributed, agile logistics—is described as combining “new technologies, more secure shore-based hubs, afloat sea-based hubs, afloat sea-bases supporting maneuver forces, and assured and resilient logistics command and control networks to sustain distributed fleet operations in a contested environment.”⁷⁶ Unfortunately, there is no programmatic evidence or public, professional discussions that indicate that distributed, agile logistics is a developed or developing concept. Improvements in the Navy’s current logistics capabilities remain marginal, incremental, and secondary to acquisition of new combat platforms. Since 2017, the distributed, agile logistics nomenclature has been used only rarely. However, there has been public discussion of improving capabilities for rearming vertical-launch system missiles at sea, a capability in which the U.S. Navy chose not to invest during the unipolar moment. There also is a recognition within the Navy that greater planning and resources need to be directed toward improving logistics capacity in contested environments.

In responding to Congress, the Navy team report argues that shifting to a distributed fleet requires a much greater number of platforms over the thirty-year shipbuilding plan that had proposed building up to 314 vessels (identified as 304 manned, ten unmanned). However, the report proposes a vast increase in large,

unmanned platforms and a comparatively modest increase in manned ships. Proposed numbers are 321 manned, 136 unmanned, for a total of 457 vessels.⁷⁷

What elements of the Navy Project Team report would constitute new aspects of a Navy strategic vision? There are at least two: (1) a move away from a CSG-centered employment/deployment concept toward a distributed fleet, and (2) adoption of unmanned systems as equivalents to ships. Both would change both internal and public conceptions of naval operations and force structure. The 355-ship goal postdates the submission to Congress of the Navy Project Team report.

THE RHETORIC OF 355 SHIPS

Most critics view the Navy as opportunistic in publicizing a goal of 355 battle-force ships for a future fleet.⁷⁸ There seemed to be little coincidence in the fact that presidential candidate Trump suggested the number of 350 ships as an appropriate size for the American fleet during his campaign. (This was first suggested on September 7, 2016, in a campaign speech in Philadelphia. In subsequent speeches as president, he has adopted the 355 number.)⁷⁹ At the time, few inside the Beltway possibly could conceive of a Trump victory and the Navy was content to urge a fleet size of 308, derived from a *Navy Force Structure Assessment (FSA)* conducted in 2014. Once President Trump achieved his unexpected electoral victory, the Navy issued a new *FSA* on December 14, 2016, “justifying” the 355 number, with the claim that the assessment had been conducted in a thoroughly analytical manner. Critical doubts about the thoroughness of the analytics have prompted the Navy more recently to conduct a new, 2019 *FSA* (already under way) that “is expected to better detail the types of ships needed.”⁸⁰

However, as noted in the Navy Project Team report to Congress (source number five in table 1) and the competing independent reports, the 355 number (depending on how calculated) is actually a lower estimate of the fleet size required for a full-scale conflict versus the PRC or Russia, let alone a fleet to handle some mix of dispersed 2+2 contingencies. The Navy Project Team called for a total of 457 ships, although 136 of those would be large, unmanned vessels. The competing reports from CSBA and MITRE called for 382 (arguably 340, by current ship-counting rules) and 414 ships, respectively.

It is difficult to find a single independent naval analyst who will argue that fewer than 355 ships would be sufficient to ensure victory in a naval campaign against the antiaccess network of the PRC. Instead, many will argue that the current defense budget cannot support the acquisition and subsequent operations and maintenance costs of a 355-ship fleet—making that estimate moot.⁸¹ However, that is a different assessment from whether the current fleet would prevail in war or even match peacetime COCOM requirements.

What, then, does the 355 number really mean? It simply means that the U.S. Navy recognizes that in a world of 2+2 threats (as opposed to the assumption of global cooperation that laces *CS21R*), neither the current number of approximately 285 total ships, nor the thirty-year shipbuilding plan total of 304 ships, nor the previous 2014 *FSA* total of 308 would be enough when the potential opponent (the PRC) simply is building ships—with designed capabilities similar to U.S. warships—at a much faster rate. Unlike under previous administrations, the Navy leadership now is willing to say so. In previous administrations, the rhetoric was that, even if fewer in numbers, U.S. warships were more capable. Yet again, rigorous and detailed unclassified/open-source analyses of that claim have not been conducted in recent years. And they particularly have not been done in the context of planned PLA capabilities (such as indigenous aircraft carrier construction). From the perspective of an aspirational goal, and given the lack of detailed analyses, 355 ships is as good a number as any other that is greater than today's.⁸²

The wrinkle, however, is that the acquisition of a 355-ship Navy now has become law! The 2018 National Defense Authorization Act includes a provision requiring a buildup to 355 ships “as soon as practicable.”⁸³ Of course, the weakness of the statement (“as soon as practicable” could be 2050) and the inability to enforce such a provision—even if it were to be placed into a subsequent appropriations act—is well evident to the rest of Congress. As noted, changes in House of Representatives leadership following the 2018 midterm elections augur fiscal restraints.

HOW WE (MIGHT) FIGHT

Of all the inputs to the algorithm, *How We Fight: Handbook for the Naval Warfighter* is the least authoritative but originally was intended to be the most publicly accessible.⁸⁴ It remained on CNO Greenert's “to do” list from his first day in office but with a low priority, so attending to other events frequently superseded work on it, and it was released only several months before his retirement from office in September 2015. It was placed on the Navy's professional reading list immediately, but—since it never was endorsed by his successor, Admiral Richardson, and never was publicized—its impact on public debate can be described, charitably, as minimal.

CNO Greenert envisioned a public monograph that would explain the missions, attributes, capabilities, current operational concepts, and combat history (in brief) of the U.S. Navy to new officers and petty officers and the American public at large.⁸⁵ It was meant to highlight the uniqueness of the Navy (with all the consequences for public and congressional support that implies). With a final product at 166 pages, it obviously is a more extensive exposition than a standard official document. It is not a service strategic vision, per se, but describes its

purpose thus: “to articulate in a single volume the elements that determine the way we [the Navy] operate, as well as some of the overall concepts that guide our methods.” The book proceeds in a logical sequence, describing the shaping factors of “the maritime environment, our Service attributes, our history, and our current and projected future missions,” in that order.⁸⁶ This is more akin to Samuel Huntington’s strategic concept approach to articulating the Navy’s purpose than the more recent strategic vision approach.

The value of *How We Fight* as an evocation of the Navy’s strategic vision is that it gathers many of the justifying arguments used by the strategic-level documents into one source. Many of the justifying arguments are captured succinctly in tables and, more importantly, are presented in context rather than the isolated factoid manner in which they appear in other documents. As an example, the “political characteristics of the maritime environment” (which, incidentally, are not mentioned at all in the *Summary NDS*) are listed as the following:

- Customary Law of the Sea (LOS) provides rights of ships, delineates high seas from territorial seas
- Warships are the sovereign territory of their nation wherever they operate in accordance with LOS
- Freedom of navigation must be demonstrated against unlawful claims
- Sea provides a base for power projection, forward presence and crisis response
- Littorals are population, economic and political centers
- Operating forward, navies have considerable political influence and deterrent effects and can provide humanitarian assistance⁸⁷

Similar concise depictions and tables are provided for physical characteristics, economic characteristics, strategic and tactical attributes, basic types of naval warfare, future trends with operational effects, and others—all often incorporated into Navy strategic documents but rarely roped into one corral in mutual support. The ties to the other sources also include expanded discussions of all-domain access and EMW, both introduced in *CS21R* and, in the case of EMW, remaining in subsequent documents. Access and EMW are placed in the context of more-traditional naval warfare areas such as air warfare and missile defense, expeditionary warfare, strike warfare, surface warfare, and undersea warfare. Resilience is discussed as an attribute required of sailors as well as ships, which resonates with CNO Richardson, even if he prefers the word *toughness*.

In bringing the seven sources into a Navy future vision, *How We Fight* could be put in the “background information and detailed explanation” category, supporting the more authoritative documents. However, given its content and

structure, perhaps the work would be better subtitled “Handbook for Drafting Navy Strategic Visions.”⁸⁸

GLEANNING FROM OTHER SOURCES

Other sources from which may be gleaned additional clues about the Navy’s strategic vision include the DON Fiscal Year 2017 Annual Financial Report, a report that appears to have taken the place of what once was the Annual Report of the Secretary of the Navy to Congress.⁸⁹ The title and format of the report have changed throughout different presidential administrations, but it still is meant to be a DON report created independently of the Office of the Secretary of Defense. To deconflict potential parochial statements by the Secretary of the Navy from more-authoritative statements by the Secretary of Defense, the report’s scope has been narrowed to focus on the DON budget. However, it still gives the Secretary of the Navy some room to discuss priorities and objectives that could shape a new naval narrative.

Other sources are the congressional testimonies of the Navy leadership as well as speeches and articles, primarily by the Secretary of the Navy and CNO, to a wide variety of audiences. As in political stump speeches, frequently repeated themes indicate elements of the Navy strategic vision. Such speeches and articles might be expected to coincide with the *NDS*, *CS21R*, and the other five sources we have examined. However, they often are tailored to audiences in a way that can identify emerging concepts not elucidated previously. Other naval leaders also may expound on emerging concepts.

Many of the speeches can be obtained from official Navy websites (such as www.navy.mil). However, much more can be gleaned from the independent professional publication U.S. Naval Institute *Proceedings*, which routinely publishes articles by senior naval leaders alongside critiques, alternative ideas, and criticisms by other serving naval personnel and civilians in a continuing debate on the future of national security. Few ideas make it into naval documents that have not been discussed—perhaps debated fiercely—in *Proceedings* previously.

Authoritative information also can be obtained from reports on the Navy prepared for Congress by the Congressional Research Service (CRS) and the Congressional Budget Office (CBO). Even OPNAV staffers rely on CRS and CBO reports as quick sources for data.

AND THEN THERE IS THE POM

The longest-running debate concerning DoD is whether it is strategy or budget that drives its programs and force structure.⁹⁰ In theory, national strategy should be the driving factor. The military is a tool the nation uses to achieve its security

objectives in a dangerous world. Of course, the economic reality is that wants are generally unlimited, while resources are limited. In battle, the commander wants every possible resource available to defeat the enemy while preserving the lives of his or her own troops. History indicates that overwhelming force applied decisively ends most wars quickly. Yet no one can determine fully how much money to spend on security since—at least for democratic states—wars can be predicted only in the abstract, not their precise occurrence in time and space.

In peacetime, a democratic state may use a security strategy to determine the details of its military, but funding these details becomes a political process requiring compromise among competing domestic requirements. This is a weakness that democratic states do not necessarily share with authoritarian states having command (or mostly command) economies. The situation provokes critics to argue that public strategy documents are poor guides for determining a democratic state's defense strategy.⁹¹ Better, they argue, to “follow the money” in the president's budget submission and congressional legislation. Others have argued that a realistic strategic vision should be designed primarily on the basis of resources available, rather than the service's (or defense agency's) self-concept or aspirations.

For the Navy, CNO Richardson attempted to end the debate by directing in October 2016 that the Navy's POM process be initiated by the Deputy CNO (DCNO) for Operations, Plans and Strategy (OPNAV N3/N5) and consist of three phases.⁹² First is the strategy phase, led by OPNAV N3/N5, with other OPNAV staffcodes participating, followed by a requirements program-integration phase, led by the DCNO for Warfare Systems (OPNAV N9), and a resource-integration phase, led by the DCNO for Integration of Capabilities and Resources (OPNAV N8). At the CNO's direction, “under this new process, POM-19 and subsequent POMs [began] three months earlier than historical POMs . . . [with] the end product of the POM development process [being] a strategy-based, fiscally balanced, and defensible Navy Program for submission to OSD [Office of the Secretary of Defense], which appropriately implements OSD fiscal and programming guidance, addresses [Secretary of the Navy] and CNO priorities, and achieves the best balance of strategic guidance as provided in the CNOG.”⁹³ To achieve this result, the CNO also directed an OPNAV staff realignment.

The significance of the CNO's directive is that it again reinforces the theoretical role of strategy as the determinant of program requirements and force structure. In turn, this also should reestablish the importance of a Navy strategic vision in guiding future Navy decision-making. Of course, thorough implementation of the renewed process under the congressional mandate of a 25 percent headquarters staff reduction throughout DoD may prove challenging.

A MURKY MIX

If we metaphorically sum up the algorithm, what can we determine concerning the U.S. Navy's collective vision of its appropriate future?

Although the Navy always has had a reputation for independent views that make the staunchest joint ideologues livid, it is clear that CNO Richardson and the Navy leadership are committed to a vision that conforms to the 2018 *NDS* and its joint requirements. The problem they face is that the *NDS* (at least in its *Summary*) betrays a land-centric approach to understanding warfare that is hard to translate into a naval strategy. It is not only that the terminology does not fit naval campaigns; it is that, although there can be a tactically defensive naval posture, there is no such thing as a strategic defensive posture in naval warfare except not to fight at sea. Unlike in a land campaign, there are no physical spaces to defend, only forces. Thus, wartime forces at sea exist only to attack; there are no contact or blunt phases in naval warfare.

This problem is magnified by the fact that the great-power competition, which serves as the premise of the *NDS*, is not inherently a land-centric competition. If conflict were to break out today or in the immediate future with the potentially toughest opponent, the PLA, the fighting would not take place on the land. It primarily would be (for the United States) a counter-antiaccess campaign in the maritime, air, space, and electronic spectrum / cyber dimensions.⁹⁴ No planner has suggested that it is in the interest of the United States and its allies to fight a land war in East Asia. Victory in a counter-antiaccess campaign would require strikes on military targets in mainland China (C4ISR nodes, missile TELs, airfields, command structures, etc.). However, most of these strikes would not come from ground forces. Such a campaign simply does not fit a land-centric approach.

In the case of Russia, there could be ground combat, but—given the methods the Putin regime has demonstrated—it likely would be small-unit combat in a hybrid/gray-zone scenario. However, the likely locations of such scenarios—the High North, the Baltic region, the Black Sea—largely would require a naval and air response by U.S. forces, at least in the initial phases.

The other two potential opponents, Iran and North Korea, have unique characteristics but would not present the regional-to-global character of great-power war. However, in both cases, the majority of U.S. forces would be located outside the contested territory and would require an initial maritime response to reenter.

Thus, it is very difficult to craft a naval strategic vision to satisfy the challenges of the great-power competition world while remaining within the confines of the public *Summary NDS*. A great-power-competition strategy for naval forces would be more similar to the Cold War *Maritime Strategy* than any recent conception. However, a *Maritime Strategy* approach to describing the Navy's vision rams into joint ideology.

The *NDS* does discuss the need for allies and coalitions. *CS21R* is premised completely on such cooperation. However, the Trump administration does not appear willing to make the sacrifices necessary to maintain the tight alliance structure on which America's Cold War posture was predicated and that is the overarching assumption of *CS21R*. If preserving the alliance structure is no longer a priority, much of the front section of *CS21R* cannot be a rallying point for the Navy's public image.

There is nothing in the 2016 *Design 1.0* that contradicts the 2018 *Summary NDS*. However, much of *Design 1.0* is concerned with Navy organization, leadership, and training—all subjects that are of great importance to the CNO and that have an impact on operations, but that are not involved primarily in defining the service's force structure or employment. The sections that discuss force structure assessments have stimulated debate and resulted in considerable internal discussion concerning gaps in naval capabilities and employment of unmanned and potentially autonomous platforms, but it was not the CNO's intent to define an answer to such questions. *Design 1.0* does emphasize the complexity of contested environments, particularly the need for the Navy to examine how it would operate in severe electromagnetic warfare conditions that would interfere with its objective to conduct dispersed but networked operations. This is a problem that OPNAV and the fleet commands previously had a tendency to ignore, although the Naval Postgraduate School has been examining the need for "network optional" operations for some time.⁹⁵

CNO Richardson's *The Future Navy* also is in sync with the *NDS* and willing to name names concerning the threats from the PRC, Russia, North Korea, and Iran. The paper's emphasis is new technology development, and in its own way it casts doubt on the 355-ship number as a defining metric by maintaining that a "355-ship Navy using current technology is insufficient for maintaining maritime superiority."⁹⁶ Rapid introduction of technology is the CNO's measure of success.

There is a significant contradiction within the CNO's white paper series, however. This contradiction begins to show itself in *Design 2.0*, in the remarks on sustainability and the call to avoid being overwhelmed by the blistering pace. It is the CNO who is directing—throughout the three papers—the sense of urgency in response to the security environment. One could surmise that, in adding the caution in his second version of the *Design*, he is reacting to analyses of the recent Seventh Fleet ship collisions that blamed them, in part, on a sense of operational urgency that required the crews to skip necessary training and certification. Indeed, *Design 2.0* does direct the "execution of the Comprehensive Review and Strategic Readiness Review program" resulting from the accident investigations.⁹⁷ Yet the sense of great urgency remains at the forefront, and there are no details on how to achieve a balance between that and sustainability.

Moreover, there seems to be no final, identifiable goal. In saying that “[w]e must think in terms of infinite, instead of finite, time frames,” the CNO is giving the Navy an endless quest.⁹⁸ How can one maintain morale and conviction in the face of a perilous and absolutely infinite voyage? Even in the high-tempo/high-pressure competition of the Cold War, American leaders held to the expectation that someday the internal contradictions in Communism would bring about its own collapse. There was, therefore, light at the far end of the tunnel, a victory (through deterrence) for which to strive. Not only does *Design 2.0* not define an end state, but it seems to imply that—except through a major war—there is no possible end to the urgent, relax-not-a-minute military competition. It is hard to establish a pace or balance if there is nothing but an endless loop ahead. And it is hard to construct a persuasive public Navy strategic vision if endless competition is the only goal—a reason why the *Design* series, in itself, cannot fill the role of Navy vision.

The air-sea battle concept certainly would support the objectives of the *NDS*, but it only defines one particular Navy mission, in one particular theater. On the other hand, it does define a victory. Unfortunately, *Air-Sea Battle* effectively has been declared “not joint enough.” The whole premise of its joint successor, *JAM-GC*—that the struggle is over access to the global commons—is, in contrast, anemic.

The various force-structure assessments and the 355-ship number together do not constitute a strategic vision. Meanwhile, *How We Fight* is obviously too long for executive reading and does not have the narrative arc that makes modern nonfiction popular.

Therefore, the overall conclusions are as follows:

1. The Navy leadership recognizes that *CS21R* does not fit the Trump administration’s needs for a Navy strategic vision. Some sections could be recycled, but the overall package has been overtaken by events.
2. The current Navy leadership does want to have a Navy vision that fully supports the *NDS* focus on great-power competition, but the *NDS* (at least in its *Summary*) is not written in a way that the Navy can parrot. The tenor of the *NDS* seems to be that because strategy should be joint, there is no distinction in the strategic approaches to land and naval combat. (We will put traditional airpower doctrine aside for this discussion.)
3. At present, the Navy leadership still is following Secretary of Defense Mattis’s concerns about the negative effects of extensive public discussion.⁹⁹ A publicly articulated strategic vision is not a current priority.

4. *Design 1.0* and its subsequent statements do give the Navy internal directions and tasks that conform to the *NDS*; however, they are not written in a way that would provide for a public strategic vision that captures the Navy's current and future missions (and resulting structure). Both *Design 1.0* and *2.0* contain one-paragraph summaries of the Navy mission, but they are too brief to present a full image. Perhaps the most important inclusion from the CNO's *Design* in a public vision would be his sense of urgency in experimentation and technology adoption.
5. Nevertheless, a public, unclassified, strategic vision could enhance public and congressional support for the U.S. Navy. The correlation between a compelling public vision and enhanced support has been demonstrated historically.
6. On the other hand, the internal programs and operations of the U.S. Navy do not need a publicly articulated and elegantly crafted vision to conform to the direction of the *NDS*. Highlighted by the pivot to the Pacific, the Navy largely had conformed to Secretary of Defense Mattis's *NDS* even before the 2018 *NDS* existed.
7. A Navy strategic vision that focuses on great-power competition as it exists and that conforms to the objective, although not the strategic, philosophy of the *NDS* would look more like *Air-Sea Battle* (with an appropriate addition of U.S. Marine Corps capabilities) than any other strategic concept currently extant. However, joint ideology and U.S. ground forces have defeated *Air-Sea Battle*. The air-sea battle concept had the misfortune of coming into prominence when the presidential administration did not want the word *China* spoken except in the context of that country inevitably being a "responsible stakeholder." This prohibition does not apply, necessarily, to the current administration.
8. The 355 number is a program and budgetary marker that, in itself, has no dependence on—nor does it provide a basis for—a Navy strategic vision.
9. The panoply of Navy and independent force-structure assessments are useful for exposing appropriate debates—such as how much of the fleet should be unmanned, and why. The most-detailed analyses have been done appropriately on the basis of an *Air-Sea Battle* approach, even if it is not mentioned. Yet it is difficult to explain why the fleet should have 355 ships instead of 354 or 353 or 350. The consensus is that the current number of approximately 285 is too low for war fighting and, possibly,

for great-power deterrence. What the actual number should be has not been assessed thus far to conclusive and persuasive rigor. What the new Congress will fund may be another number entirely.

10. To provide the number of platforms necessary in a conflict against a great power, the Navy intends to pursue aggressively the development of unmanned surface and undersea vessels (as well as aircraft), some of which will be self-deploying and comparable in size to manned vessels. This could help operationalize the distributed fleet and distributed lethality concepts. The assumption, however, is that unmanned vessels can be acquired and operated more cheaply than manned platforms.
11. A summarized *How We Fight* could provide the keel for an updated public Navy strategic vision, with appropriate NDS themes and *Design 1.0* and *2.0* concerns added. In its current state, however, *How We Fight* is an unread textbook.

What should a Navy strategic vision appropriate to the objectives of the NDS, the CNO's directions, and Trump administration objectives overall say? Summing the algorithm and adding other clues, a concise recommended summary follows.

In the peacetime, military-technological competition with great powers, the U.S. Navy will experiment continually with new technologies and concepts so as to remain ahead of competitors and profit from the ideas of competitors, when appropriate. New technologies and concepts will be introduced to the fleet when matured and engineered for sea. These will include substantial numbers of unmanned, partly manned, and optionally manned vessels and aircraft, which—combined with EMW capabilities—could enable a more widely distributed fleet. These experiments and developments—necessary for achieving victory in future conflicts—will take priority over the peacetime deployment and forward-presence requirements of the COCOMs. Additionally, a dynamic force-employment model will modify the previous predictability and length of forward deployments, allowing for greater experimentation.

The U.S. Navy will be sized and structured to support and win a conventional-weapons joint campaign that likely will be primarily maritime (which includes air over sea, space, and electromagnetic/cyber warfare) in character against the PRC, as led by the CCP, or Russia, as led by President Putin. Being able to win such a conflict will provide the most effective deterrence against its occurrence. It is assumed that all other missions can be accomplished successfully by tailoring this force structure in scope to other assigned tasks.

With these capabilities, the U.S. Navy will carry out its enduring function as the guarantor of access to the global commons and to overseas markets and materials on which America's economic prosperity depends. Access to the global commons also ensures the ability of the joint force to transit foreign areas of crises and conflict when called on. The U.S. Navy also will provide for defense of the U.S. homeland by maintaining the most survivable leg of the strategic nuclear triad, and the Navy can function as the forward edge of U.S. missile defense when necessary.

A perusal of U.S. Naval Institute *Proceedings* would indicate that the Navy has the narrative and speechwriting talent to write an updated public strategic vision quite well.

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NOTES

1. The term *strategic vision* is used instead of *strategy* (as in the *Maritime Strategy*) because of the controversy over which Department of Defense component “does strategy.” Under joint ideology, the services man, train, and equip the forces, but do not create strategy, which is the exclusive purview of the combatant commanders. While this may seem to be merely an argument over terminology, and despite the fact that the services and defense analysts routinely refer to service plans as “strategy,” use of the term *strategic vision* side-steps that whole debate. Many of the plans are indeed visions that do not survive contact with the reality of the budget.
2. The term *strategy concept* is from Samuel P. Huntington, “National Policy and the Transoceanic Navy,” U.S. Naval Institute *Proceedings* 80/5/615 (May 1954), pp. 483–93. From the mid-1950s to the mid-1990s, the U.S. Navy was enamored of using *strategic concept* to describe its definition of purpose, but it largely has been dropped in the last two decades. (For example, after the Cold War, the Office of the Chief of Naval Operations’ Strategic Concepts Branch was renamed the Strategy and Concepts Branch.) This is another reason this article uses the term *strategic vision*.

3. A bureaucratic reason that CS21R remains in the public vision is that it is a DON document signed by the Secretary of the Navy as well as the heads of the three sea (not only naval) services: the U.S. Navy, U.S. Marine Corps, and U.S. Coast Guard (the latter is not actually part of the DON). To negotiate a document approved and signed by all four individuals (thus representing all their equities) is a prodigious and lengthy effort.
4. Like all endeavors done well by military officers and defense civil servants, the drafting of naval strategic visions takes time and energy that spill over between administrations, and the process does not necessarily follow the drafting of higher-level guidance (such as the *National Security Strategy*) in tight, sequential order. In the case of CS21R, drafting of the document—which involved Navy and Marine Corps staff officers, scholars at the Naval War College and Naval Postgraduate School, and other members of the naval analytical enterprise—began in the waning months of the George W. Bush administration, even though it eventually was issued under President Obama. For an assessment of the drafting of CS21R, see Peter Swartz, William Rosenau, and Hannah Kates, *The Origins and Development of A Cooperative Strategy for 21st Century Seapower (2015)* (Arlington, VA: CNA, September 2017), available at www.cna.org/.
5. An underlying theme found in Simon Reich and Peter Dombrowski, *The End of Grand Strategy: US Maritime Operations in the Twenty-First Century* (Ithaca, NY: Cornell Univ. Press, 2017). The book, however, does not necessarily endorse the Trump administration's foreign policy perspective.
6. There is an existing official USN web page that holds links to so-called strategic documents ranging from the *Summary NDS* and 2018 *Nuclear Posture Review to the U.S. Coast Guard Arctic Strategy* and *DON Innovation Vision*. See “Strategic Documents,” Navy.mil. However, this is a nonhierarchical mixture, and there is no attempt to explain how they relate to each other or whether they are directive or aspirational. The site also includes links to Secretary of the Navy and CNO speeches and transcripts.
7. The full name of the thirty-year plan is the Report to Congress on the Annual Long-Range Plan for Construction of Naval Vessels. Officially overlaid on all these is joint doctrine—but a good portion of joint doctrine is so banal or boilerplate that the services often can ignore it with some impunity.
8. The POM is the formal document each DoD entity prepares for submission to the Secretary of Defense outlining its spending on new systems acquisition, operations and maintenance, personnel, and other costs. All programs of record must be included in the POM to ensure sustained funding. The internal DoD approval process, now referred to as PPBE (planning, programming, budgeting, and execution), is complex, with multiple (and sometimes redundant) phases. Not all POM submissions necessarily make it into the defense budget the Secretary of Defense presents to the president, or that the president transmits to Congress, or that Congress approves.
9. On the most recent title changes, see Swartz, Rosenau, and Kates, *Origins and Development*, p. 88.
10. Stuart B. Munsch [RAdm., USN], unclassified phone conversation with author, October 2, 2018.
11. Jeff Schogol, “Rep. Adam Smith: Trump’s Military Spending and Planning Needs a Reality Check,” *Task & Purpose*, February 19, 2018, taskandpurpose.com/; Katie Bo Williams, “What the Midterms Mean for National Security,” *Defense One*, November 7, 2018, www.defenseone.com/.
12. Carlisle A. H. Trost [Adm., USN, CNO], “Looking beyond the Maritime Strategy,” U.S. Naval Institute *Proceedings* 113/1/1,007 (January 1987), p. 15.
13. Swartz, Rosenau, and Kates suggest that the OPNAV programming organizations (codes) do not always see the need for a formal strategic vision document, since they “have tended to believe that they have more than enough other guidance to get their jobs done without an additional product . . . to accommodate in the POM process” (p. 102). My own view is that the absence of a formal document allows the programmers and budgeteers to cherry-pick preferred guidance statements from the CNO and Secretary of the Navy documents and speeches. On this point, a good discussion can be found in Irv Blickstein et al., *Navy*

- Planning, Programming, Budgeting, and Execution: A Reference Guide for Senior Leaders, Managers, and Action Officers* (Santa Monica, CA: RAND, 2016), p. 10.
14. Joe Gould, "Wittman to US Navy: 'You Have to Say 355 Is the Number,'" *Defense News*, April 11, 2018, www.defensenews.com/.
 15. Jason Schwartz, "'We Are Fighting for Information about War': Pentagon Curbs Media Access," *Politico*, July 26, 2018, www.politico.com/.
 16. The reference to the CCP is deliberate, because the People's Liberation Army is pledged to the party, not to the state of China.
 17. Kevin Baron, "Pentagon Began Clampdown on Senior Leader's Public Speaking Months Ago," *Defense One*, November 14, 2018, www.defenseone.com/.
 18. Donald J. Trump (@realDonaldTrump), "I am certain that, at some time in the future, President Xi and I, together with President Putin of Russia, will start talking about a meaningful halt to what has become a major and uncontrollable Arms Race. The U.S. spent 716 Billion Dollars this year. Crazy!," Twitter, December 3, 2018, twitter.com/realdonaldtrump/status/1069584730880974849.
 19. An excellent example of a discussion by an influential academic is John J. Mearsheimer, "A Strategic Misstep: The Maritime Strategy and Deterrence in Europe," *International Security* 11, no. 2 (Fall 1986), pp. 3–57, available at mearsheimer.uchicago.edu/. There was also concern that implementing the *Maritime Strategy* might spark a nuclear exchange. See Barry R. Posen, "Inadvertent Nuclear War? Escalation and NATO's Northern Flank," *International Security* 7, no. 2 (Fall 1982), pp. 28–54, available at www.jstor.org/. A detailed assessment that is supportive of the *Maritime Strategy* is found in Norman Friedman, *The U.S. Maritime Strategy* (Annapolis, MD: Naval Institute Press, 1988). The best source for the briefings and documents that built the *Maritime Strategy* is John B. Hattendorf and Peter M. Swartz, eds., *U.S. Naval Strategy in the 1980s: Selected Documents*, Newport Paper 33 (Newport, RI: Naval War College Press, December 2008), available at digital-commons.usnwc.edu/.
 20. William Schneider Jr., "Financing the Reagan 600-Ship Naval Modernization Program, 1981–89" (statement at the "Options and Considerations for Achieving a 355-Ship Navy from Former Reagan Administration Officials" hearing before the Seapower Subcommittee of the Senate Armed Services Committee, July 18, 2017), pp. 1–4, available at www.hudson.org/.
 21. John T. Hanley Jr., "Creating the 1980s Maritime Strategy and Implications for Today," *Naval War College Review* 67, no. 2 (Spring 2014), p. 22, available at digital-commons.usnwc.edu/.
 22. In addition to articles in such journals as *International Security*, the Soviets undoubtedly were aware of some of the results of the Navy-sponsored Global War Game series (conducted at the Naval War College) in which both DoD civilian appointees and individual academic experts participated as game decision makers. Elements of the *Maritime Strategy* were gamed at this forum even before its public release. For details, see Bud Hay and Bob Gile, *Global War Game: The First Five Years*, Newport Paper 4 (Newport, RI: Naval War College Press, June 1993).
 23. In a special issue of *Journal of Strategic Studies* edited by Lyle J. Goldstein, John B. Hattendorf, and Yuri M. Zhukov, two Russian scholars maintain that the Kremlin did not see a credible threat to their SSBN bastions but were concerned about Tomahawk land-attack cruise missiles carried on U.S. SSNs, which could be used to attack military installations ashore from positions in the northern seas. See Vladimir Kuzin and Sergei Chernyavskii, "Russian Reactions to Reagan's 'Maritime Strategy,'" *Journal of Strategic Studies* 28, no. 2 (April 2005), pp. 429–39. In a review of John Lehman's *Oceans Ventured: Winning the Cold War at Sea* (New York: W. W. Norton, 2018), Dov Zakheim insists that Soviet leaders did take notice of the U.S. naval threat to their SSBNs and that "[i]t is no exaggeration to assert, as Lehman does, that the Navy played a vital role in bringing the Cold War to a successful conclusion in America's favor." 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), pp. 141–46.

24. An interesting recent commentary on this from a reputable source is found in George Friedman, "A Speech by Mike Pence and the Sum of All Chinese Fears," *Geopolitical Futures* subscription e-mail list, November 9, 2018. Friedman contrasts U.S. media disinterest in a speech that was given by the vice president and whose themes had been expressed previously by subordinate officials with Chinese parsing of it and resultant perceptions of it heralding increased tensions. In reference to CS21R, Swartz, Rosenau, and Kates maintain that by failing to engage academic "carpers" the Navy lost opportunities to reinforce its message publicly (*Origins and Development*, p. 109).
25. Huntington, "National Policy and the Transoceanic Navy," p. 483. Also cited in Swartz, Rosenau, and Kates, *Origins and Development*, p. 2.
26. The final version of NWP 1 is available at www.history.navy.mil/. During the shift of responsibility for drafting naval doctrine from OPNAV to the short-lived Naval Doctrine Command in the early 1990s, NWP 1 fell through the cracks. There was a stillborn effort within OPNAV to revive it in 1998–99.
27. John Grady, "Congress Presses SECDEF Mattis on US Navy Path to 355 Ships," *USNI News*, June 13, 2017, news.usni.org/.
28. David B. Larter, "Will Looming Budget Cuts Bust Up the Navy's Plans for an Enormous Fleet?," *Defense News*, November 16, 2018, www.defensenews.com/.
29. U.S. Defense Dept., *Summary of the 2018 National Defense Strategy of the United States of America* [hereafter *Summary NDS*] (Washington, DC: 2018), p. 1.
30. Individual Navy personnel played surprising roles. For example, a nuclear submarine commander served as the commanding officer of the provincial reconstruction team in Khost, Afghanistan.
31. Although the 2+2 shorthand is not used in the *Summary* (despite the military's proclivity for acronyms and numerical descriptions), those four states are identified clearly as the threats. U.S. Defense Dept., *Summary NDS*, p. 4.
32. *Ibid.*, p. 7.
33. Wayne P. Hughes Jr. [Capt., USN (Ret.)], *Fleet Tactics and Coastal Combat*, 2nd ed. (Annapolis, MD: Naval Institute Press, 2000), pp. 40–44.
34. U.S. Defense Dept., *Summary NDS*, p. 6.
35. However, Secretary of Defense Mattis has made some independent statements concerning the need for U.S. strategy to have a more maritime focus. See, for example, Mike Gallagher, "How to Save the U.S. Navy," *National Interest*, October 15, 2018, nationalinterest.org/. Gallagher quotes Mattis as follows: "I believe we are moving toward a more maritime strategy in terms of our military strategy to defend the country"; quoted from Office of Sen. Roger Wicker, "Wicker Asks Mattis about Shipbuilding Schedule, Russia Threat," press release, April 26, 2018, www.wicker.senate.gov/. In the press release, the Secretary of Defense continues, "It is the nature of our time, so I would be supportive if the Senate found a way to increase the shipbuilding budget."
36. U.S. Defense Dept., *Summary NDS*, pp. 8–10.
37. It does seem strange, however, that this statement appears in the midst of a section on alliances rather than threats.
38. The United States has never ratified the Law of the Sea Treaty officially. But it has adhered to and demonstrated support of its provisions, and therefore still can be considered a participant in UNCLOS.
39. U.S. Navy Dept., *A Cooperative Strategy for 21st Century Seapower: Forward, Engaged, Ready* (Washington, DC: March 2015), pp. 19–26.
40. The *reconnaissance strike network* construct was popularized in the publications of the Center for Strategic and Budgetary Assessments. For a study in antiaccess and its related terminologies from all aspects, see Sam J. Tangredi, *Anti-access Warfare: Countering A2/AD Strategies* (Annapolis, MD: Naval Institute Press, 2013).
41. John M. Richardson [Adm., USN, CNO], *A Design for Maintaining Maritime Superiority, Version 1.0*, Navy.mil, January 2016, p. 1.
42. *Ibid.*, p. 4.
43. *Ibid.*, pp. 1, 4.

44. John M. Richardson [Adm., USN, CNO], "Deconstructing A2/AD," *National Interest*, October 3, 2016, nationalinterest.org/.
45. Richardson, *A Design for Maintaining Maritime Superiority*, 1.0, p. 5.
46. *Ibid.*, p. 6.
47. Several fellows of the Brookings Institute, an influential and long-standing Washington think tank, have suggested that the Navy will find it unaffordable to fund both the replacement SSBNs and a 355-ship "conventional" fleet. John Grady, "Panel: Navy May Have to Choose between New Ballistic Missile Subs or 355 Ship Fleet," *USNI News*, November 23, 2018, news.usni.org/.
48. Richardson, *A Design for Maintaining Maritime Superiority*, 1.0, p. 7.
49. *Ibid.*
50. *Ibid.*, p. 8.
51. *Ibid.* Emphasis in original.
52. See Peter Dombrowski, "One Cheer Only," and Sam J. Tangredi, "A Powerful Helm Order," both in U.S. Naval Institute *Proceedings* 143/7/1,373 (July 2017), pp. 62–64.
53. The CNO also convened his own advisory panel (October 2016–March 2017) to analyze the three reports, during which many of the themes that later appeared in *The Future Navy* were discussed.
54. John M. Richardson [Adm., USN, CNO], *The Future Navy*, Navy.mil, May 17, 2017, p. 1.
55. *Ibid.*, p. 3.
56. *Ibid.*, p. 4.
57. *Ibid.*, p. 7.
58. John M. Richardson [Adm., USN, CNO], *A Design for Maintaining Maritime Superiority, Version 2.0*, Navy.mil, December 2018.
59. *Ibid.*, p. 4.
60. *Ibid.*, p. 9.
61. *Ibid.*, p. 8.
62. *Ibid.*, p. 15.
63. A point used to illuminate the origins and outlines of the concept of antiaccess warfare in Tangredi, *Anti-access Warfare*. See especially pp. 36–40.
64. An example of academic opposition is Amitai Etzioni, "Who Authorized Preparations for War with China?," *Yale Journal of International Affairs* 8, no. 2 (Summer 2013), pp. 37–51, available at yalejournal.org/.
65. Michael E. Hutchins et al., "Joint Concept for Access and Maneuver in the Global Commons: A New Joint Operational Concept," *Joint Force Quarterly*, no. 84 (January 2017), pp. 134–39. JAM-GC is also one of the most cringe-worthy acronyms ever to come out of DoD.
66. For a discussion on aspects of and threats to the maritime commons—which includes the airspace over the water and, arguably, aspects of space and cyberspace—see Sam J. Tangredi, "The Maritime Commons and Military Power," in *Conflict and Cooperation in the Global Commons: A Comprehensive Approach for International Security*, ed. Scott Jasper (Washington, DC: Georgetown Univ. Press, 2012), pp. 71–88.
67. Properly, the term COCOM refers to the individual in command of a U.S. unified combatant command (UCC), not the organization itself. However, COCOM has become standard usage inside and outside the Pentagon to refer to an entire UCC organization, not only its commanding officer. This discussion continues that bad habit.
68. "U.S. Fleet Forces Command Mission," *U.S. Fleet Forces Command*, www.public.navy.mil/. My own view is that many of these functions should be returned to the OPNAV staff, under tighter control of the CNO.
69. For example, Scott H. Swift [Adm., USN], "A Fleet Must Be Able to Fight," U.S. Naval Institute *Proceedings* 144/5/1,383 (May 2018), pp. 28–33, available at www.usni.org/.
70. U.S. Navy Dept., *Report to Congress: Alternative Future Fleet Platform Architecture Study* (Washington, DC: Office of the Chief of Naval Operations [N8], November 2016), pp. 3, 11–13.
71. For example, one commentator proclaimed distributed lethality as the surface navy's "strategy for the Trump era." See Loren Thompson, "'Distributed Lethality' Is the Surface Navy's Strategy for the Trump Era," *Forbes*, January 10, 2017, www.forbes.com/.

72. U.S. Navy Dept., *Report to Congress*, p. 3.
73. Thomas S. Rowden [VAdm., USN], Peter A. Gumataotao [RAdm., USN], and Peter J. Fanta [RAdm., USN], "Distributed Lethality," U.S. Naval Institute *Proceedings* 141/1/1,343 (January 2015), pp. 18–23, available at www.usni.org/.
74. Thomas S. Rowden [VAdm., USN], "Surface Force Strategy: Return to Sea Control" (presented at the 29th Annual Surface Navy Association Symposium, Arlington, VA, January 9, 2017), available at www.public.navy.mil/.
75. U.S. Navy Dept., *Report to Congress*, p. 12.
76. *Ibid.*, p. 13.
77. The question of what size an unmanned system must reach to be designated a "ship" remains unresolved.
78. Steven Stashwick, "The U.S. Navy's New 30-Year Plan Grows Its Fleet Realistically, but Slowly," *The Diplomat*, February 16, 2018, thediplomat.com/.
79. Amy Sherman, "Trump Touts 350-Ship Promise at Naval Academy Graduation," *Politifact*, May 25, 2018, www.politifact.com/.
80. Joe Gould, "US Navy to Launch Force Structure Assessment," *Defense News*, September 5, 2018, www.defensenews.com/.
81. The Congressional Budget Office estimates that current Navy budget requests barely can support the current fleet size, let alone fund an increase to 355 ships. "CBO: 355-Ship Fleet Will Cost \$6.7 Billion More per Year Than Current Navy Budget Request," *USNI News*, March 15, 2018, news.usni.org/.
82. In fact, there are indications that the 2019 Navy Force Structure Assessment still will consider 355 to be the minimum number of ships. Vice Adm. William R. Merz, USN, Deputy CNO for Warfare Systems (OPNAV N9), stated at a congressional hearing on November 27, 2018, "We have seen nothing from the combatant commands to date, or from Secretary Mattis's National Defense Strategy, that will give us any indication we'll be coming off that 355-ship [fleet] in composition or in total numbers." Ben Werner, "Next Navy Force Structure Assessment Unlikely to Alter Plan for 355-Ship Fleet," *USNI News*, November 28, 2018, news.usni.org/.
83. National Defense Authorization Act for Fiscal Year 2018, Pub. L. No. 115-91, § 1025 (a), 131 Stat. 1283, 1549 (2017); David B. Larter, "Trump Just Made a 355-Ship Navy National Policy," *Defense News*, December 13, 2017, www.defensenews.com/.
84. U.S. Navy Dept., *How We Fight: Handbook for the Naval Warfighter* (Washington, DC: GPO, 2015), available at news.usni.org/.
85. In their discussion of the drafting of CS21R, Swartz, Rosenau, and Kates suggest that there were some differences among the drafters regarding the intended audience. The authors state that CNO Greenert "was looking for a document that was generally authoritative for any audience: The naval officer corps, Capitol Hill, [Office of the Secretary of Defense], friends and allies, potential adversaries . . . whomever" (*Origins and Development*, p. 15). However, many of the OPNAV staff members involved had very specific audiences in mind. One can speculate that the result could have motivated CNO Greenert to insist that *How We Fight* be completed during his tenure, even though this required contracting the job outside OPNAV.
86. U.S. Navy Dept., *How We Fight*, p. 1. Admiral Greenert specified this order himself, and it has a nuclear-power training program-type logic: mathematics background, scientific principles, systems design, and then engineering procedures. Admiral Greenert was a nuclear submariner, as is Admiral Richardson.
87. *Ibid.*, p. 32.
88. There is an excellent brief that details methodologies and personal experiences of the process of drafting naval strategy: Bruce Stubbs, "Personal Observations on Creating Navy Strategy" (presentation to the Naval War College, Newport, RI, July 6, 2015; updated and presented October 18, 2018). Although Stubbs is Director of Strategy (N50), OPNAV, the presentation is unofficial. His major points are summarized in Swartz, Rosenau, and Kates, *Origins and Development*, pp. 113–15.
89. U.S. Navy Dept., *Accountability to America: Department of the Navy Fiscal Year 2017 Annual Financial Report*, available at www.secnav.navy.mil/.

90. The debate concerning whether strategy drives Navy programs is discussed in Thomas-Durrell Young, "When Programming Trumps Policy and Plans: The Case of the US Department of the Navy," *Journal of Strategic Studies* 39, no. 7 (2016), pp. 936–55.
91. Anthony H. Cordesman of the Center for Strategic and International Studies colorfully writes: "For several decades, American strategic planning has been little more than a facade for annual line item budget debates. . . . U.S. strategy documents bordered on farce. They set broad policy goals without any supporting plans, force goals, clear mission-oriented programs, future years spending plans, and measures of effectiveness." *America's FY2020 Defense Strategy and Programming Crisis* (Washington, DC: Center for Strategic and International Studies, November 13, 2018), www.csis.org/.
92. John M. Richardson [Adm., USN, CNO], "POM Process Reorganization and OPNAV Staff Realignment," NAVADMIN 231/16, October 18, 2016, available at www.public.navy.mil/.
93. Ibid. The last comment indicates that the CNOG is expected to be a translation of the guiding strategy rather than a simultaneous or individually developed document.
94. Tangredi, *Anti-access Warfare*, pp. 161–82.
95. See Todd Wyatt and Donald Brutzman, "Network Optional Warfare," *NPS Wiki*, May 3, 2018, wiki.nps.edu/. Responding to the issue from the Pacific Fleet perspective, Admiral Swift has championed "mission command." See Scott H. Swift [Adm., USN], "Master the Art of Command and Control," U.S. Naval Institute *Proceedings* 144/2/1,380 (February 2018), pp. 28–33, available at www.usni.org/.
96. Richardson, *The Future Navy*, p. 4.
97. Richardson, *A Design for Maintaining Maritime Superiority*, 2.0, p. 8.
98. Ibid., p. 4.
99. Current CNO Richardson was Joint Forces Command (JFCOM) Director of Strategy and Policy (J5) while General Mattis was the JFCOM commander. One logically can assume that the CNO is particularly aware of the former Defense Secretary's strategic philosophy.

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.

As we have noted in previous articles in this series, one of the primary missions of the CNO Professional Reading Program is to encourage sailors at all levels to develop the habit of reading books of consequence. In this article, we would like to share with you some short excerpts (somewhat paraphrased) from writings by influential leaders about how much reading contributed to their lives and successes. Perhaps one or more will inspire you to take the time to make reading a part of your professional development.

- “When I want to discover something, I begin by reading up everything that has been done along that line in the past—that’s what all the books in the library are for. I see what has been accomplished at great labor and expense in the past. I gather the data of many thousands more. The three essentials to achieve anything worthwhile are, first, hard work; second, stick-to-it-iveness; third, common sense.”—Thomas Edison
- “I really had a lot of dreams when I was a kid, and I think a great deal of that grew out of the fact that I had a chance to read a lot.”—Bill Gates
- “The function of education is to teach one to think intensively and to think critically. Intelligence plus character—that is the goal of true education.”—Martin Luther King Jr.
- “If you cannot read all your books . . . fondle them—peer into them, let them fall open where they will, read from the first sentence that arrests the eye, set them back on the shelves with your own hands, arrange them on your own plan so that you at least know where they are. Let them be your friends; let them, at any rate, be your acquaintances.”—Winston Churchill
- “I insist on a lot of time being spent, almost every day, to just sit and think. That is very uncommon in American business. I read and think. So I do

more reading and thinking, and make less impulse decisions than most people in business. I do it because I like this kind of life.”—Warren Buffett

- “Of all things, I liked books best.”—Nikola Tesla
- “If we encounter a man of rare intellect, we should ask him what books he reads.”—Ralph Waldo Emerson
- “From a child I was fond of reading, and all the little money that came into my hands was ever laid out in books.”—Benjamin Franklin
- “Once you learn to read, you will be forever free.”—Frederick Douglass
- “My definition of an educated man is a man who never stops learning and wants to learn. I am not interested in whether a man has a PhD or not, or an MA for that matter, or a diploma. Mao never had one, neither had Khrushchev, nor Stalin.”—Lee Kuan Yew, first prime minister of Singapore
- “When I decided to return and work in Africa in the early 1980s, I sold all my few possessions—things like my stereo systems, my color TV (big thing in those days!), my prized music albums . . . everything I could sell. I then used all the cash to buy books, because I wasn’t sure if I’d be able to find some of my most important books. When one of my friends asked me why I was doing this, I said books were my most important possession, because with the knowledge they give me, I can make enough money to buy anything else!”—Strive Masiyiwa, international entrepreneur and philanthropist
- “Balance your reading. Read broadly. Include people you don’t agree with. This is how we are stretched.”—Rick Warren
- “Reading is important. If you know how to read, then the whole world opens up to you.”—Barack Obama
- “Years ago I got hooked on a habit that turned out to be one of the most valuable of my life: reading at least 30 minutes a day. Jim Rohn, one of my teachers, told me that reading something of substance, something of value, something that was nourishing, something that taught you distinctions, was more important than eating. ‘Miss a meal,’ he said, ‘but don’t miss your reading.’ Remember: leaders are readers.”—Tony Robbins, personal development coach
- “If there is education, there will be everything in life. Government can make roads, hospitals, and also construct school buildings. But your homes can brighten up only if your children are educated. I am confident that if we focus on education, our society will certainly develop.”—Narendra Modi, prime minister of India

So there you have it: words of wisdom and encouragement from billionaire businessmen, world leaders, and noted philosophers. We could not agree more!

JOHN E. JACKSON

(adapted from an article on SmartandRelentless.com posted on October 20, 2016)